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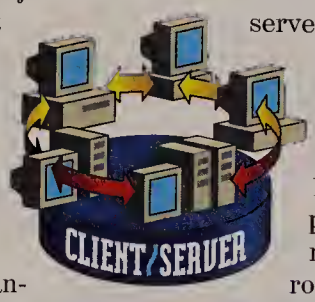
COMPUTERWORLD

Job scheduling

Traffic jams piling up

By Rosemary Cafasso

The mainframe task of job scheduling is as boring as it gets. But it is about to get very interesting in the client/server realm.



Some client/server users are running into jams because they lack the task management tools needed to control their increasing processing loads.

In other cases, users are just now implementing job-scheduling technologies, including task management tools built into some client/server applications.

Analysts, meanwhile, are cautioning these users to avoid short-term fixes, advising them to instead come up with a client/server job-scheduling strategy. Otherwise, analysts warned, down the road users will run into big problems that range from poor system performance to business errors.

Juggling act

Job scheduling is a routine part of mainframe life where processing tasks such as producing financial reports or running a payroll are organized, coordinated and run

Job scheduling, *page 121*

OLE woes brewing

Major features of OLE

OLE AUTOMATION
Allows applications to expose command sets that operate within and across applications

OBJECT LINKING
Allows applications to link with data objects in other applications

VISUAL EDITING
Allows users to create compound documents easily, incorporating text, graphics, sound, video and other diverse object types

DRAG-AND-DROP
Allows users to drag objects between applications and drop objects inside other objects

By William Brandel

By Comdex/Fall '94, users will be able to choose from a plethora of applications that support Microsoft Corp.'s Object Linking and Embedding 2.0 technology. However, while the technology floats the promise of integrating applications and components, no one can guarantee that OLE 2.0 will work in the applications that support it.

And unlike Component Integration Laboratories, which was established to test compatibility between future OpenDoc applications, Microsoft has not set up mechanisms to determine whether existing or soon-to-be-delivered OLE-enabled applications will work together or share functions. In short, there is no way for users to know if two different OLE-enabled applications will share compatible OLE 2.0 functions until they buy and test them on their own.

OLE, *page 12*

While IBM, DEC seek comeback trail, users search for vision

User concern builds over missing IBM revenue plan

By Craig Stedman
NEW YORK

With his company on the verge of reporting another profitable quarter this week, IBM Chairman Louis V. Gerstner last week made his first appearance in front of a major user group. Neither event appears to have overly excited customers or analysts, who give Gerstner his due but remain unsold on IBM's future because of its lack of revenue growth and hazy strategy.

The pilgrimage to the Guide International Corp. meeting here elicited mixed reviews from members. Users looking for clues — about IBM's long-term product strategies, its ability to keep sales and service at acceptable levels despite sharp work force cuts or its plans to reverse market share declines in various businesses — said they were left wanting.

And while financial analysts were mostly upbeat about IBM's expected second-quarter profit —

IBM, *page 15*

"IBM and all of you [in this room] should be shot in the side of the head for allowing the mythology to be generated . . . that mainframes are dead. Let me tell you, I've been the CEO of three large enterprises — you take my mainframes away and my business is gone."

— as quoted in "Guide International Corp." newsletter

IBM Chairman Louis V. Gerstner

GAMMA LIAISON

Digital overhaul receives mixed reviews

By Mary Brandel

Customers last week greeted the latest Digital Equipment Corp. reorganization with a smattering of applause and a healthy dose of skepticism, as they await details on how the company plans to return to profitability.

Digital said last week it would accelerate layoffs of 20,000 employees, bringing the total head count to 65,000 by the end of fiscal 1995. It also simplified its organizational chart, forming an advanced technology group plus nine business units, six of which fall under two divisions.

"I have this tremendous fear that upper management is so distracted with restructuring schemes that they may not ever get back to business," said Robert Cloninger, data processing manager at OK Industries, Inc. in Fort Smith, Ark. "It's just a growing feeling that they're not going to pull it out."

But many observers interviewed last week were encouraged by Digital's announced $1.8

Digital, *page 14*

Token Ring in limbo

By Stephen P. Klett Jr.

Unrest is growing among Token Ring users who claim they are being overlooked — especially by IBM — when it comes to next-generation LAN technology and particularly Asynchronous Transfer Mode.

At least one vendor appears to be listening closely. Centillion Networks, Inc., a start-up in Mountain View, Calif., last week unveiled a Token Ring switch with a clear migration path to ATM.

More join in

Separately, IBM and Chipcom Corp. announced add-in modules for their respective 8260 and Oncore switching hubs. For its part, Madge Networks, Inc. unveiled a $295 adapter card targeted at branch offices and small Token Ring networks. The average cost of most Token Ring adapter cards is approximately $550.

Token Ring, *page 16*

59% of LANs in large IBM shops are Token Ring, and they generate 89% of mission-critical LAN traffic, CIMI Corp. says.

interview with
SEYMOUR CRAY

Experts say the traditional supercomputers made by Seymour Cray are an idea whose time has nearly ended. But in his first comprehensive interview in the last several years, the legendary designer says his concepts will flourish for at least two more decades.

SEE STORY PAGE 20.

CHIP SIMONS

in depth
THE END-USER INVASION

Some end users spend anywhere from 10% to 60% of their work day on IS-related activities. We talk to three such users about the ups and downs of helping out.

SEE STORY PAGE 93.

Newspaper

A PUBLICATION OF IDG

What's Inside

July 18, 1994

OLD MACDONALD HAD A NEWTON...

■ Satellites are providing the American farmer with up-to-the-minute crop information. New software is measuring chemical and fertilizer mixes, and PC-based systems are determining breeding practices. The reason: IS executives such as Monsanto Co.'s Mark Vanacht are keeping their customers profitable by bringing technology to the farm. **Management, page 83.**

BOB BARRETT

NEWS

■ IBM seeks to promote **OS/2 applications** by bundling them with the next version of the operating system. *Page 6*

■ CP/M creator and Digital Research founder **Gary Kildall** dies at age 52. *Page 6*

■ The **PowerPC** may be doing better than expected, but analysts predict sales could suffer because of a lack of native applications. *Page 8*

■ The final beta version of Microsoft's **SNA Server** 2.1 is drawing rave reviews from users who want to connect their LANs to mainframes and AS/400s. *Page 8*

■ **Sybase's** key multiprocessing product, Navigation Server, will not support some of the company's own database features. *Page 10*

■ Microsoft and Digital demonstrate their **Common Object Model** for creating multiplatform OLE applications. *Page 12*

■ Novell off-loads **NetWare-to-mainframe integration** work to a small MVS software firm. *Page 16*

■ IBM's **NetView for OS/2** will add another key platform to the NetView network management product line. *Page 16*

■ **Seymour Cray** and other technology experts outline plans and visions for the future of supercomputing. *Page 121*

COMPUTER INDUSTRY

■ **Dell** will stop retail distribution and focus on direct marketing. *Page 32*

DESKTOP COMPUTING

■ Modular, **upgradable notebooks** make for nice marketing buzzwords, but users still tend to just replace the systems. *Page 39*

WORKGROUP COMPUTING

■ Users at large firms are running head-on into a lack of standard **naming conventions** required to support distributed computing systems in an enterprise network. Some sites are writing their own alternatives. *Page 47*

ENTERPRISE NETWORKING

■ SNMP is coming under fire for its lack of security and excessive network traffic, but users and vendors are not stampeding to adopt a second version intended to address those concerns. *Page 57*

LARGE SYSTEMS

■ Shops looking at IBM's **measured-usage pricing** for mainframe software find it intriguing but still limited in usefulness. *Page 67*

APPLICATION DEVELOPMENT

■ Although **Informix's NewEra** object-oriented development tool will ship without all of its promised features this month, observers say the product outdoes client/server tools rivals such as Gupta and Powersoft. *Page 77*

CAREERS

■ Many valuable **Notes applications** can be built within the Notes environment without complex development components. *Page 102*

MARKETPLACE

■ Are **preinstalled PC modems** in your future? By 1995, more than one-third of PCs are expected to ship with a fax/modem. If you're unsure about modem requirements, however, a LAN modem server could be an option. *Page 111*

COMMENTARY

■ **Bill Laberis** says the survival of IBM and Digital is tied to their ability to hang on to large accounts. *Page 36*

■ **Yosi Amram** encourages users to weigh the pros and cons before deciding to buy a database-oriented groupware package, standard E-mail or both. *Page 37*

■ **Esther Dyson** warns that cyberspace is a tough place to foster "correct" information behavior. *Page 37*

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Executive Briefing

It looks like users will soon see a broad selection of applications that support Microsoft's Object Linking and Embedding (OLE) 2.0 technology. But while the technology promises to help users integrate applications and components, no one can guarantee OLE 2.0 will work with the applications that support it. *Page 1*

There are signs that IBM's Advanced Peer-to-Peer Networking is a stopgap — with IBM and others implying that the internetworking architecture is likely to become obsolete even before it gets off the ground. And users who have grown tired of waiting for the internetworking architecture to support their legacy SNA applications and favorite third-party products are likely to turn to TCP/IP in increasing numbers. *Page 4*

At one time they were just called power users. Today, some workers in end-user departments have become part of an extended IS organization, acting as technology advocates, coaching other users and helping design new systems from a business standpoint. *Page 93*

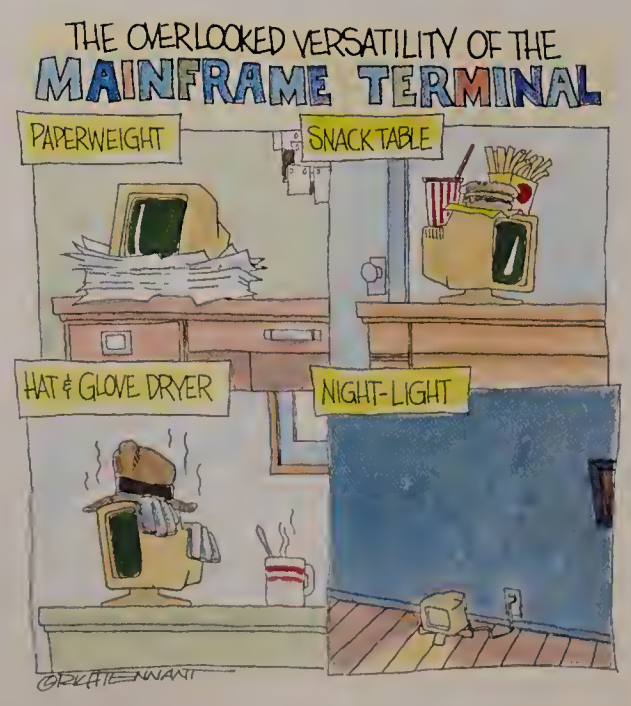
American businesses are increasingly willing to relinquish control over operations — and IS — once considered far too critical to trust to outsiders. Sales, order processing and customer support are among the functions they're farming out to third-party logistics providers. *Page 28*

Supercomputer patriarch Seymour Cray says his 40-year career building the world's fastest computers is far from over. *Page 20.* Cray also seems to be trying to duplicate a feat he accomplished 30 years ago: coming out with breakthrough technology with a lean and mean organization. *Page 6*

Users say mainframe database vendors such as IBM and Computer Associates have generally reacted well to meeting their legacy data-access requirements by providing enhancements such as SQL commands and Open Database Connectivity. *Page 67*

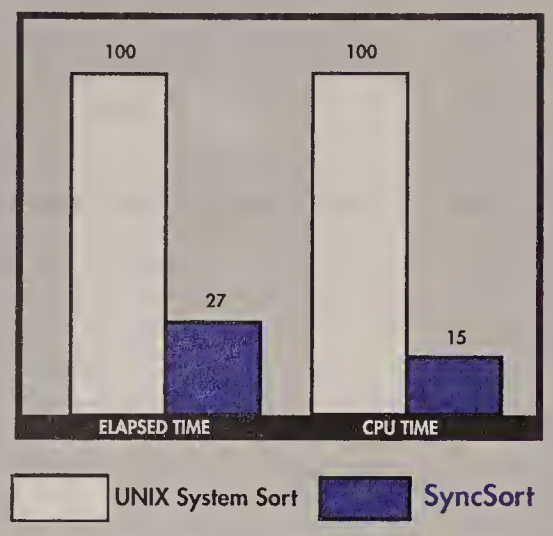
On-site this week: An ATM network could save lives in Baltimore medical centers. *Page 60.* Dannon may become the cream of the dairy industry with a new electronic data interchange network. *Page 64.* A new Scottish hospital finds opportunity and headaches in a greenfield systems implementation. *Page 70.* Coordination is the key to building new systems at Allstate. *Page 78*

The 5th Wave *by* Rich Tennant



The UNIX System Sort

PERFORMANCE



FUNCTIONS

	UNIX System Sort	SyncSort
RECORDS FORMATS		
Fixed length binary	NO	**YES**
Variable length binary	NO	**YES**
ASCII Text	YES	**YES**
RECORD PROCESSING		
Selectian	NO	**YES**
Reformatting	NO	**YES**
Summarizatian	NO	**YES**
Grauping	NO	**YES**
COLLATING SEQUENCES		
Standard ASCII	YES	**YES**
EBCDIC	NO	**YES**
User Defined	NO	**YES**
Multi-byte	NO	**YES**

UNIX has its advantages, but its System Sort isn't one of them.

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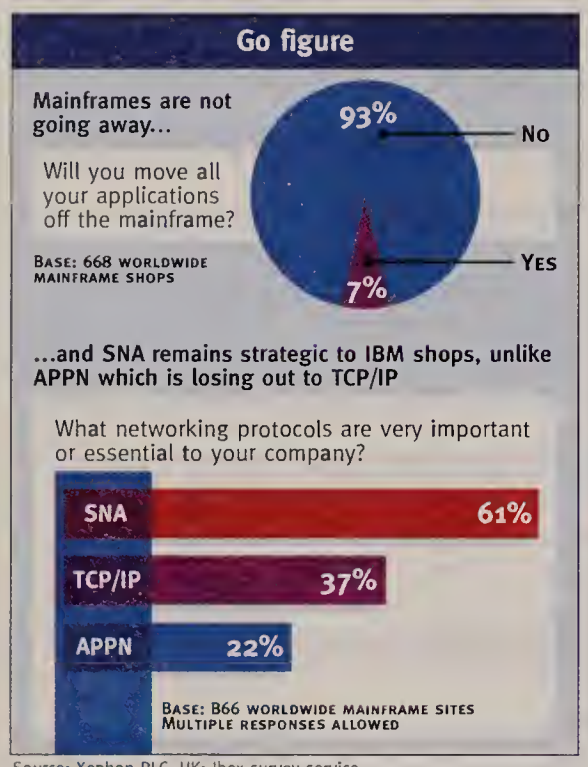
APPN seen headed for obsolescence

By Elisabeth Horwitt

Mounting evidence indicates that IBM's highly strategic Advanced Peer-to-Peer Networking (APPN) will be obsolete before it even gets off the ground. Five years of waiting for APPN to achieve full functionality and industry support have left SNA shops eyeing TCP/IP as their future corporate internetworking standard.

American Airlines, for example, has a large legacy SNA installation but "will not necessarily turn to APPN," said Todd Masters, a programmer at the Dallas-based carrier. American is already inclined toward TCP/IP because the protocol is now used on PC LANs and to connect hosts within its Sabre reservation system.



Source: Xephon PLC, UK; Ibex survey service

Among the factors seen contributing to APPN's demise are the following:

- Lack of third-party vendor support.
- Delays in IBM's delivery of full APPN support for legacy SNA applications, which have left APPN primarily on AS/400s.
- Emergence of a more functional successor to APPN, which is poised to start shipping on third-party platforms shortly after APPN ships.

The strategic importance of APPN lies in its ability to automatically track resources and negotiate network paths across the enterprise. It promised to eliminate a lot of the grunt work involved in managing a traditional SNA network.

Playing it down

However, last week, even IBM appeared to downplay APPN. In a keynote address at a technical briefing in Boston, IBM senior vice president Ellen Hancock portrayed APPN as "part of a path that IBM is building" from traditional SNA systems to Broadband Networking Services (BBNS), its future Asynchronous Transfer Mode (ATM)-based architecture. BBNS, she emphasized, will support APPN along with many popular internetworking protocols, including TCP/IP.

"APPN is dead; it's not going to make it," said Anura Guruge, an independent SNA consultant in New Ipswich, N.H.

Messing up

IBM may have blown its chance with many traditional mainframe shops because it took so long to introduce Dependent LU Server/Requester, a critical APPN component that enables legacy SNA devices and applications to take advantage of an APPN network.

IBM announced support for Dependent LU Server, the host portion of the protocol, on VTAM Version 4 Release 2 last month and for the Dependent LU Requester piece on its 3174 communications controllers around the same time. Still pending, however, is support for third-party SNA gateways, hubs, routers and terminal emulators that many corporations use to tie their PCs to legacy 3270 host applications.

Where did everybody go?

Indeed, support for APPN is still conspicuously lacking, even among vendors that have committed to implementing the product. IBM and 3Com Corp. are the only router vendors that have introduced APPN-Network Node support.

IBM has further clouded APPN's future by making it clear more than a year ago that a more functional, efficient routing architecture is in the works.

Called High Performance Routing (HPR), the architecture will offer routing performance at least equal to TCP/IP, as well as adaptive routing around failures, class of service route calculation and congestion control that are superior to its internetworking rival, according to IBM spokespeople. HPR will also provide users with an easy transition to BBNS.

Unfortunately, HPR too is late: Originally slated for announcement early this year and commercial rollout by year's end, the protocol is now slated for a third-quarter release and is expected to begin shipping next year, IBM executives said. Vendors have promised support for HPR sometime next year or shortly after they ship APPN support.

Several IBM users attending an APPC/APPN Conference last week said they were frustrated by IBM's apparent inability to provide them with a painless, timely migration path from traditional SNA to a more client/server-oriented networking environment.

Microsoft investigation

Antitrust moves ahead?

By Ed Scannell and Mitch Betts

The U.S. Department of Justice and Microsoft Corp. are negotiating to resolve accusations that Microsoft employs unfair business practices to dominate the PC operating systems business, according to a source briefed by Microsoft.

One published report last week said that a July 14 negotiating deadline had passed with no agreement. Consequently, the Justice Department's Antitrust Division reportedly is prepared to sue the Redmond, Wash.-based software giant as soon as next week, according to the report.

If the Antitrust Division does file suit, it can do so in any one of a number of federal courthouses.

The Justice Department appears to be zeroing in on the way Microsoft licenses DOS and Windows to hardware manufacturers and whether it has leveraged its dominant position in the operating systems business to win a commanding share in several Windows applications markets, according to the source.

Several OEMs have claimed in the past that Microsoft policy requires PC suppliers to pay for DOS and Windows licenses for every processor they ship — even on systems without Microsoft's system software.

Microsoft officials have repeatedly denied violating antitrust laws.

Even if Microsoft is forced to amend its DOS licensing practices, some do not believe it will have a significantly negative impact on the company.

Spokespeople for the Justice Department and Microsoft declined to comment on the case.

3Com 'frame relays' APPN solution to AS/400 sites

By Suruchi Mohan

3Com Corp. this week will offer its AS/400 customers a multiprotocol router product that incorporates the Advanced Peer-to-Peer Networking-Network Node (APPN-NN) over frame relay.

"The ability of [AS/400] customers to run multiple protocols across frame relay is most significant," said Don Czubek, president of Gen2 Ventures, a consulting firm in Saratoga, Calif. Frame relay, in conjunction with 3Com's NetBuilder, can handle non-SNA traffic such as IP, IPX and NetBIOS.

It is important to AS/400 users who have lacked router support, agreed Tom Nolle, president of CIMI Corp. in Vorhees, N.J. This is the first APPN solution provided by someone other than IBM, he added. IBM's 6611 routers include APPN functionality but not in the frame-relay context.

To support or not support

Nolle said he does not expect other major router vendors such as Cisco Systems, Inc. and Wellfleet Communications, Inc. to take APPN-NN too seriously, although both companies said they will announce products in the first half of next year. Cisco's installed base is SNA, and if APPN becomes hot, the company will not be able to leverage its expertise in SNA. For this reason, Nolle said, Cisco has dragged its feet on delivering a product even though it announced APPN-NN support in August.

Cisco disagrees. "This is an area we have been investing heavily in," said Mike Zadikian, IBM product manager at Cisco in San Jose, Calif. "We have a strong commitment to APPN and have invested $400,000 in source code alone. We've said the first half of 1995, and it's been that way from the beginning."

Wellfleet is in the throes of a merger, and Nolle said he does not expect product deliveries for at least a year.

"Frame relay is important in any capital-intensive equipment such as routers," Nolle said. The money organizations save in using dial-up frame-relay links instead of the leased Synchronous Data Link Control lines can go toward the purchase of a router that enhances AS/400 performance.

Traditionally, the AS/400 has handled routing and directory functions, which slow down application processing, explained Philippe Byrnes, product manager of SNA internetworking at 3Com in Santa Clara, Calif. By giving the APPN routing function to NetBuilder, 3Com has made the AS/400 more efficient.

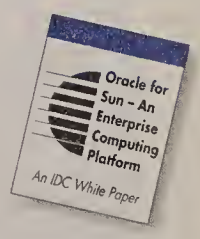
APPN-NN, which will be sold as a software upgrade to 3Com's NetBuilder II router, illustrates the growing use of frame relay as a wide-area networking protocol.

Correction

Due to an editing error, an item in the June 27 issue about optical disc inventor David Gregg's suit against Philips Electronics N.V., incorrectly said the suit asked for $20 million in damages. It should have said $250 million.

Working Together To Bridge Open Systems.

For too long 'open' was more of an idea than a reality. That's why the two UNIX leaders, Sun and Oracle, with 38% and 44% of their respective UNIX markets (IDC), formed dedicated cooperating teams of engineers and field consultants to ensure optimal performance of our integrated, open solutions. Both companies also make extensive use of each other's emerging technologies in running our businesses — a combined beta site of over 22,000 employees. No solution goes to market that we wouldn't rely on ourselves. For a copy of 'Oracle for Sun - An Enterprise Computing Platform' - an IDC white paper, call: **1-800-633-1071 Ext. 8160.**



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Cray 4 stakes: ultimate risk, reward

The emergence in 1963 of a computer more powerful than any built by IBM so irritated Thomas J. Watson Jr., amidst his legions of manufacturing and lab engineers, that he turned to his typewriter and tapped out a memo: "I understand that in the laboratory developing this system there are only 34 people, including the janitor," he wrote.

The machine was the Control Data Corp. 6600, and the difference between Control Data and IBM was a young engineer from the University of Minnesota named Seymour Cray. The "janitor" memo still represents a moment worth savoring to Cray, a moment when his small, dedicated organization made a big impact on an industry, he said in a recent *Computerworld* interview (see page 20.)

He has been seeking to recreate that organization during 37 years of building high-powered computers. He left his first employer, Engineering Research Associates, to help found Control Data in 1957. He left Control Data to found Cray Research, Inc. in 1976 and left Cray Research to found Cray Computer Corp. in 1989. "We traded water [the lakes and streams of northern Minnesota] for the mountains," he says of his facility in Colorado.

The Meta View

Cray has been trying to recreate his efficient organization for years.

Charles Babcock

Cray notes that he never thought twice about leaving organizations that he viewed as too large and bureaucratic. "I've never been bothered with these transitions. I've always perceived them as unavoidable," he said in an earlier interview with the Smithsonian Institution.

But in the move to Colorado, he learned that not everyone shared his point of view. He worked for many years with a familiar core of Cray Research engineers in a lab in Chippewa Falls, Minn., 100 miles from the Eagan headquarters. His Cray 3 project was behind schedule and over budget when he and other Cray executives agreed it should be spun off as a separate entity. He invited longstanding coworkers to join him. "It was surprising to me how few decided to take the risk," he says.

Cray has had to build new supercomputing expertise into his company. He is noted for — and even admits — spurning people management in favor of technical research. But in fact, Cray Computer is a young company; many of its 380 employees are in their 20s and 30s. Molding them into an effective engineering team has fallen mainly on Cray's shoulders.

They are producing $^{3}/_{16}$-in. square gallium arsenide chips and threading them with tiny beryllium/copper wires for the modules of the Cray 4. Like the Cray 3, the Cray 4 will be cooled by an efficient liquid heat absorber, an inert fluorocarbon that flows between the layers of chips. Unlike the Cray 3, which stands as a dark, 4½-ft. octagon, the CPU of the Cray 4 will be "smaller than the human brain," Cray says, even though it will offer four times the performance of the Cray 3.

Only a handful of Cray 3s were ever built, and they did not function as planned, due mostly to a defective part — new, high-speed static RAM memories. The company struggled to establish its Colorado Springs GaAr foundry, spending $27 million on another firm's equipment after three gallium arsenide chip fabricators weren't able to fill the need.

Now, Cray is in a position to capitalize on years of pioneering design and manufacturing work. The gallium arsenide investment will pay off when silicon manufacturers realize they are running up against the barriers of physics once they reach speeds of 500 MHz and .1 micron circuit sizes. Gallium arsenide works faster and in a smaller package because electrical signals emerge from the chip with crisper definition than silicon allows, Cray says.

Cray has taken risks on the organizational, financial and technical fronts this time around, greatly multiplying his chances of failure. But no one should be too surprised if he pulls off another supercomputing coup with the Cray 4.

Babcock is *Computerworld*'s technical editor. His MCI Mail address is 575-2737.

IBM to bundle OS/2

Deal will add Footprint suite to September shipment

By Ed Scannell

IBM is negotiating its first application bundling deal for OS/2, involving a low-end integrated package that will ship with the next version of OS/2 due in September. This move is critical for OS/2 to strut its stuff and gain market and mind share, users and analysts said.

IBM is close to concluding a deal with Footprint Software, Inc. in Toronto to bundle its Footprint Works suite of 11 applications with the 4M-byte version of OS/2, code-named Warp.

One of the perpetual criticisms OS/2 has faced is its lack of true 32-bit, graphical applications that give users concrete reasons to buy the operating system over Windows.

In creating such a deal with Footprint, IBM can now more dramatically demonstrate the advantages OS/2 applications have over their Windows counterparts, users and analysts said last week.

Good move for users

"It is really nice to see that they are trying to give users a real taste for what real applications can do," said Bob Holmes, a technical consultant at Southern California Gas Co. in Los Angeles. "It is a move that could help [OS/2] users and developers."

George McQuilken, president of research firm Demeter International, Inc. in Marblehead, Mass., agreed. "I think it is logical [for IBM to bundle applications] because the cost of delivering these things separately is often too high."

IBM, which partially funded the development of Footprint Works, has been selling the suite in the European market under its own logo since last fall.

The Footprint suite has 11 components, including a word processor, spreadsheet and database. It serves as a low-end complement to Lotus Development Corp.'s SmartSuite for OS/2, but that suite is not bundled with OS/2.

The Footprint suite will enable OS/2 users to test a wide range of OS/2 capabilities and will also give them a comparable product to Microsoft's Works for Windows.

An IBM spokesman refused to comment on the talks with Footprint and only said that IBM is often considering such opportunities.

Also on the applications front, Athena Design, Inc. in Cambridge, Mass., later this month or early next month will ship its Mesa 2 spreadsheet for OS/2. Many OS/2 users said they believe the new spreadsheet takes best advantage to date of the Workplace Shell and IBM's Systems Object Model technology.

Still growing

Once OS/2 had shipped more than 5 million copies, the number of OS/2 applications continued to increase

OS/2 applications shipped	1992	1993
Lotus	60,000	130,000
Spinnaker Software	12,000	44,800
Microsoft	15,000	44,000
WordPerfect	15,470	37,000
Other	1.7M	2.6M

Source: Dataquest, Inc., San Jose, Calif.

"They have done a great job of integrating it with the Workplace Shell. It is a very usable product from a design standpoint," said one user who has been beta-testing the product under a nondisclosure agreement.

In various forums on Internet bulletin boards, Athena said it will begin taking orders from users this week. The company set an introductory price of $99 for the Personal Edition for the first 90 days after which the price will increase to $199.

Athena has yet to set a delivery date for the Enterprise Edition. The company is still asking users which features to include or not include, a spokeswoman said.

Athena was scheduled to ship the Personal Edition of Mesa 2 in the first week of August. However, the company has decided to hold off for a month in order to include Rexx compatibility as well as ship what it believes will be the first OpenDoc spreadsheet.

Obituary

CP/M creator: Gary Kildall

Gary Kildall, creator of what many consider the first popular operating system for PCs, died in Monterey, Calif., last week at the age of 52. The cause of death had not been established at press time.

Kildall wrote the Control Program/Monitor operating system, commonly known as CP/M, in 1973. Prior to CP/M, PC users — then mostly hobbyists — had to program their systems using a punched paper tape reader.

Kildall formed Digital Research, Inc. out of his home in 1974, and by the mid-1980s revenue had reached $5 million.

Gary Kildall: *Missed IBM PC boat*

In 1980, IBM approached Kildall to adapt CP/M for what became IBM's first IBM PC. Kildall reportedly believed he had a deal with IBM but learned later that IBM had decided to go with an upstart named Bill Gates who headed a fledgling company called Microsoft Corp.

Kildall remained chairman of Digital Research until the company was sold to Novell, Inc. in 1991. In 1985, he founded KnowledgeSet, which created one of the first consumer applications for CD-ROM, a version of the Grolier Encyclopedia.

— Ed Scannell

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News Shorts

Microsoft inks Chicago deal with DSP

Microsoft Corp. last week signed a deal to use **DSP Group, Inc.**'s speech compression technology in its upcoming Chicago operating system. Called Truespeech, the DSP product will primarily target applications such as collaborative computing, voice mail and PC-based training and development.

HP unveils object layer for Oracle 7

Hewlett-Packard Co. plans to unveil today an object-oriented adapter product designed to let Oracle Corp.'s Oracle 7 database store C++ and Smalltalk objects. Due out in September, Odapter costs $6,000 for a two-user server license with an unlimited number of clients.

AT&T named System One provider

AT&T Global Information Solutions signed a five-year, $150 million deal to be the sole hardware provider to **System One**, a computerized reservation system provider. System One will use AT&T's System 3000 family to expand its business, including providing agencies with point-of-sale decision support, and to integrate data from multiple sources.

One down, one to go . . .

100Base-T "fast" Ethernet passed the first of two major hurdles to becoming an official standard last week when the Institute of Electrical and Electronics Engineers, Inc. unanimously voted to send the 100M bit/sec. draft standard to its members for letter ballot. The sponsor ballot could occur by year's end. According to the Fast Ethernet Alliance, this vote assures users that 100M bit/sec. Ethernet products purchased today will work with future products.

IBM slashes price on ThinkPad 500

IBM PC Co. cut 40% off the price of its ThinkPad 500 subnotebook, a move some analysts said corresponds with the subnotebook life cycle, which is nearing an end. Base pricing for the 3.4-pound subnotebook is now $799 for an 85M-byte hard drive or $999 for a 170M-byte hard drive.

Memorex turns to systems integration

Memorex Telex Corp. said it is shifting its primary business focus from network hardware and storage products to systems integration and network services. Target customers of the retooled Irving, Texas, company are corporations migrating SNA environments to open systems. Memorex's new lineup of service offerings includes network design, implementation and management, remote monitoring and diagnostics and third-party support.

SHORT TAKES **Computer Sciences Corp.** said it won a seven-year, $55 million outsourcing contract with Boston-based **American Medical Response** to manage the company's national claims processing, billing and receivables. . . . **AST Research, Inc.** said it will use **Cyrix Corp.**'s microprocessors for some of its desktop products, although it will continue to use Intel Corp. as its primary microprocessor supplier. . . . **Wellfleet Communications, Inc.** last week announced a deal with Microsoft to jointly develop, market and support multiprotocol routing technology for Microsoft's upcoming Windows NT Advanced Server. Cisco Systems, Inc. struck a similar agreement last fall. . . . **Aldus Corp.** and **Altsys Corp.** settled their lawsuit last week, agreeing to amend the marketing arrangement for Aldus' Freehand. Among other things, Aldus agreed to keep the marketing of Freehand separate from future marketing of Adobe Systems Inc.'s Illustrator.

PowerPC chip sales surge

Slow desktop sales raise questions about where chips have gone

By Jaikumar Vijayan

IBM PC Co.'s recent, unexplained announcement of delays in introducing PowerPC-based PCs [CW, July 4] ironically coincides with news from its Microelectronics Division that it will ship its one millionth PowerPC 601 microprocessor this month.

The fact that IBM was originally expected to announce PowerPC-based desktops in the second quarter may have led to the optimistic ramp-up of the processor, analysts said.

The ramp-up, which analysts agreed is one of the fastest in the microprocessor industry, has created much speculation about where the chips have gone.

"It's certainly not on the shelves, that's for sure," said Stephen Smith, an analyst at PaineWebber, Inc., a Wall Street brokerage firm. "We don't believe that Apple has taken more than 400,000 [units] in terms of the products they have out."

Smith estimated that IBM's RS/6000 division accounts for fewer than 50,000 units, leaving nearly 500,000 chips still "waiting for a market" — possibly in an IBM or Apple Computer, Inc. warehouse.

IBM said it shipped the chips based on orders from customers such as Apple, its own RS/6000 division, Digital Equipment Corp. and others.

For users, a surplus of PowerPC chips could indicate that IBM is waiting for operating systems and native applications to appear before shipping compatible PCs, observers said.

At the same time, published reports that IBM may market its PowerPC- and Intel Corp.-based desktops as one line have caused concern that IBM may be uncertain about the positioning of its PowerPC products in the market. Analysts warn that such a move might confuse customers and undermine IBM's PowerPC architecture.

Meanwhile, a substantial slowdown in sales of Apple's Power Macintosh during the past two months may also be contributing to a surplus of chips in the market, analysts said.

While Apple's May slowdown is viewed as a seasonal dip in sales, users and analysts agreed that continued sluggishness could hurt the company and the PowerPC camp considerably. So far, according to Computer Intelligence/InfoCorp in Santa Clara, Calif., PowerPC-based desktop systems have been sold almost exclusively to Apple users and have failed to impress Intel users.

Losing steam

According to PaineWebber, IBM may be forced to cut production of its PowerPC chips until demand increases, particularly with Motorola, Inc. about to release its own versions of the 603 and 604 PowerPC chips. Also, because Microsoft Corp.'s NT port to PowerPC appears further along than IBM's OS/2 version, IBM cannot afford to hold back on the PowerPC any longer without losing momentum, PaineWebber said.

Positive results

Despite this, early market figures indicate that the PowerPC chip may have done as well as — or actually better than — expected in the past 100 days.

Preliminary figures from CI/InfoCorp reveal that in the retail channel, PowerPC-based systems may have actually shipped in greater numbers during the first 100 days than PCs based on Intel's high-performance Pentium processor.

"This ties in with our original sales estimates," said Aaron Goldberg, executive vice president at CI/InfoCorp. "We think that Apple's forecast of 1 million PowerMacs by year's end is an achievable goal" based on its performance so far, he said.

However, CI/InfoCorp's figures relate only to the retail channel and do not track direct sales, where it believes Pentium sales by companies such as Dell Computer Corp. and Gateway 2000, Inc. could push actual Pentium figures higher than those of the Power Macintosh.

The home market is driving the PC business. See page 39.

Microsoft's SNA Server 2.1 impresses beta testers

By Suruchi Mohan

■ **Microsoft Corp. last week announced that it has entered the final beta-testing phase for SNA Server 2.1, which lets LAN users exchange data with mainframes and IBM AS/400s.**

The product is drawing praise from at least three beta testers, all of whom also tested the earlier beta releases. "We've been pleasantly surprised," said Bill Mattox, a systems consultant at an international financial services firm in Southern California. "Microsoft has given everything we want and then some; the configuration of the server is without comparison."

The case of setup and configuration seems the most popular feature in this version. It now takes a mere 17 minutes to install Version 2.1, compared with half a day for some competing products, one tester said.

The feature Microsoft is touting most is the increased capacity of the SNA Server. The new release will have the capability to handle as many as 2,000 users and 10,000 sessions concurrently.

Network administrators, however, do not currently need such capacity. When they do, the ability to handle large volumes of data will be a plus. Eventually, "we may have thousands of users, and the fewer servers we have, the better," said Jim Snively, a systems consultant at Sun Co. in Philadelphia.

Uneasy feelings

But users are wary about the ability of the network or the server hardware to handle such large numbers of users and sessions. "Will this create bottlenecks?" one user asked.

Overall, the beta users polled said they were "very impressed" because the product shows strong support for SNA.

SNA Server is a client/server application that runs on Microsoft's NT Advanced Server and supports Intel Corp., Digital Equipment Corp. Alpha and Mips Technologies, Inc. microprocessors on the client and server. Additional features include TN3270 support, which makes it easier for Unix clients to talk to the mainframe, and direct channel attachment to the host, a capability that Microsoft is relying on third parties to provide.

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New Sybase deadline bumps database support

By Kim S. Nash

With one promised delivery date come and gone, Sybase, Inc. is not taking any chances with a revised end-of-1994 target for shipping Navigation Server, a multiprocessing database add-on module. But to make the deadline, Sybase has opted to delay support for its latest System 10 database, company officials acknowledged last week.

In other words, Navigation Server 1.0 will support an older version of Sybase's SQL Server database, Release 4.9, which lacks some features needed for on-line transaction processing (OLTP) in a distributed mode.

Sybase has been touting System 10 as the database for client/server architectures, but now a key product — Navigation Server — will not support it. Navigation Server is the product that would enable System 10 to do multiprocessing. System 10 includes some advanced features, such as referential integrity and support for nonrelational data types — images, for one — that are not included in System 4.9.

A release of Navigation Server that in fact moves the product from Release 4.9 to System 10 is in the works but is not slated to ship until the end of next year, said Katrina Garnett, general manager of parallel and distributed products at Sybase.

"We had to draw lines somewhere to get the product out, but we all along thought that we would be enhancing our 1.0 release," Garnett said.

Change in strategy

As a result, the Emeryville, Calif.-based database company may have to reposition the initial version of Navigation Server to emphasize its usefulness in decision support rather than OLTP, according to beta users and analysts.

Parallel view

Navigation Server 1.0 will support parallel versions of several database tasks, such as query, update and index creation, according to Sybase.

"I didn't get exactly what I wanted for [multiprocessing] OLTP . . . so I will have to change the way I was going to use Navigation Server," said Ken Walpert, chief information officer at Kwasha Lipton, a financial firm in Fort Lee, N.J.

The Chase Manhattan Bank NA, also a Navigation Server beta site, wants System 10 compatibility but is willing to wait. "They had to freeze development at some point to get the product out there," said Jane Landen, vice president of bank card services. "I'll hold them to that [System 10] promise, though," she added.

In tough shape

Having received a test copy of Navigation Server just a month ago, Chase is in better shape than Kwasha Lipton, which will have to shift gears to implement the product. Instead of running Navigation Server with production applications it built for the System 10 database, Kwasha Lipton will have to separate Navigation Server from OLTP systems, Walpert explained.

Plus, any decision-support programs created for Navigation Server will require users to stick with an older version of the Sybase database, Release 4.9. Differences between new and old versions of the Sybase database mean applications written for one will not automatically run well on the other, said Richard Finkelstein, a consultant at Performance Computing in Chicago.

For example, Sybase changed its implementation of SQL as it moved from Release 4.9 to System 10. Therefore, applications written for the first release of Navigation Server "would have to be reworked when Sybase does come out with a version of Navigation Server for System 10," Finkelstein said.

Mainframe databases strive to keep up. See page 67.

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Remote users to get easier file access

By Michael Fitzgerald

Traveling Software, Inc. has started beta-testing LapLink for Windows, an update of its well-known file transfer package that should give remote users easier access to data at central sites, according to sources close to the company.

Some beta testers said it may also offer an added bonus in the form of easing software distribution and upgrade headaches.

Slated to ship in September, the new version combines remote software distribution, remote control, remote access and file synchronization features, the sources said.

While other companies compete in the remote access and remote control markets, and a small number of firms compete in the synchronization market, LapLink for Windows appears to be the first product to combine the three features.

Speed counts

Sources briefed on the product said the remote access and remote control features that LapLink will offer are two to four times faster than products currently on the market, such as Symantec Corp.'s PCAnywhere remote control package.

For information systems managers, possibly the most interesting piece of the coming LapLink product is its distribution facility, which builds on LapLink's file transfer capabilities.

"They think they have a way to easily distribute software [remotely]. And it has a lot of good tools for MIS people," said one source briefed on the product.

For example, the main tool for file and data transfer is a new feature called SpeedSynch, according to sources. SpeedSynch slips "under" the operating system, avoiding driver issues that typically slow remote-access tools. SpeedSynch is a file transfer protocol for sending large amounts of data between systems, sources said.

Another feature is Smart Exchange, a file synchronization feature that will automatically update file changes only if that file resides in both a local and a remote location, such as a contact database.

The beta tester, who works at a multibillion dollar distribution company, said the new features could help address the issue of how to transfer new software upgrades quickly to internal departments as well as remote users.

"Our problem now is constant upgrades of software [from vendors]," the tester said. "We all wander around and upgrade systems a department at a time, and I'd like to be more efficient. The LapLink software could be a way for doing that" because of its speed.

Mark Eppley, Traveling Software's chairman and chief executive officer, declined to comment on specifics of the product. But he did confirm a fall ship date and said the product does contain "significant new patented technology that makes it possible to transfer large amounts of data very quickly, remotely."

Screenplex

The product also has "video scaling," according to a well-placed source at Traveling Software. With video scaling, a network administrator can view four separate screens at once over the multitransport, multisession-capable product.

Michael Radigan, a program manager at Xerox Corp. in Rochester, N.Y., which is rolling out notebooks to 4,000 salespeople, said he liked the sound of the product.

"It's very important, both from the software distribution ... and the support perspective," Radigan said. He pointed out that his central support people can use the remote control tool to help support salespeople, although he questioned whether a product such as LapLink could do file updates for thousands of users at a time.

Missing link

Traveling Software will try to move its best-selling file transfer program into the remote control market now dominated by Symantec's PCAnywhere and Microcom's Carbon Copy

NUMBER OF USERS*	
LapLink	1.7M
PCAnywhere	1.4M
Carbon Copy	1M
Relay Gold	0.3M

*U.S. USERS WHO USE THE SOFTWARE AT LEAST ONCE A MONTH

Source: Computer Intelligence/InfoCorp, Santa Clara, Calif.

COM spec falls short of CORBA compliance

By Melinda-Carol Ballou

Microsoft Corp. and Digital Equipment Corp. demonstrated their Common Object Model (COM) specification for creating multiplatform Object Linking and Embedding (OLE) applications last week, four months late.

Contrary to industry expectations, COM will not include guidelines for interoperability between OLE and the Object Management Group's Common Object Request Broker Architecture (CORBA). Microsoft and Digital late last year said the specification will address those issues.

This means there will be no clear-cut standard for interoperating between two major object models — OLE and CORBA — but developers said they require it. The disparate methods for OLE-to-CORBA interoperability offered by multiple vendors are likely to create complexity and confusion, they said.

CORBA is an emerging industry standard that acts as an object traffic cop, enabling objects to communicate across the network.

COM will specify application programming interfaces and cross-platform protocols for OLE. This will ultimately allow OLE to be distributed across platforms that Digital and Microsoft support, officials said.

Digital alone will address the interoperability issues between COM and its Object Broker implementation of CORBA, using gateways between Object Broker and OLE.

The OMG may seek a standard for OLE-to-CORBA interoperability this fall if Microsoft backs it.

OLE woes are brewing

CONTINUED FROM PAGE 1

"Our approach is laissez-faire," said Doug Enrich, director of the developer relations group at Microsoft. "We're not going to do compatibility testing. We don't know if the market wants a compatibility and certification effort."

But, according to users and developers interviewed last week, the compatibility of application integration features is a huge issue. It will ultimately determine how fast users buy OLE 2.0 applications and how fast developers deliver them, they said.

Let the vendor do it

"OLE 2.0 compatibility will absolutely affect our purchase decision process," said Donald Wilcox, technology manager at R. R. Donnelley & Sons Co. in Lancaster, Pa. "Having us determine compatibility could ultimately slow down our OLE 2.0 implementation by six to 12 months."

Moreover, scant OLE 2.0 development efforts appear to be under way at user sites.

"We've talked to 1,500 customer prospects about their OLE 2.0 development efforts, and none of them are doing it," said Lynn Renshaw, product manager at Metaphor, Inc. in Mountain View, Calif. Metaphor markets a tool called Capsule that enables a developer to link OLE functions. "None of the corporate developers are even seriously thinking about it," she said.

Microsoft officials said they were working with major sites such as Bankers Trust Co. and MCI Communications Corp. in developing for OLE 2.0, but said they had no data to measure to what degree OLE 2.0 is used for development at corporate sites. The Patricia Seybold Group's Michael Goulde said until good tools were made available to mitigate the complexities of the OLE 2.0 specification, "you'll only see the bleeding-edge companies working with it."

"We develop some software internally, but we're not developing for OLE 2.0," said Ray Terlaga, a technician at NDMA, Inc., a management consulting firm in Ridgefield, Conn. "That would be investing in complexity."

OLE complexities

OLE 2.0 is a very large and complicated specification for developers. The specification itself is 1,400 pages long, with 400 interfaces.

Bit by bit

Because OLE 2.0 is such a complex technology to incorporate into applications, many vendors are rolling out OLE 2.0 functions such as in-place editing or drag-and-drop on a piecemeal basis.

For example, the spreadsheet that will be delivered in Lotus Development Corp.'s SmartSuite 3.0 will support drag-and-drop but will not support in-place editing. As a result, if a user wants to perform in-place editing between Microsoft's Word word processor and Lotus' 1-2-3 spreadsheet — the exact functionality that OLE 2.0 is supposed to address — it will not work.

Because no major applications have been broken into objects yet, users essentially load a new application each time they use OLE 2.0 to drag an application feature into another. As a result, a simple drag-and-drop can take 15 to 30 seconds on a 486-based PC — the same time or more that it would take to load an application.

Gartner Group, Inc. recommends at least 10M bytes of RAM to support OLE 2.0 applications, while the Patricia Seybold Group says users will need an Intel Corp. Pentium-based machine for acceptable performance.

As a result, some vendors have decided to forego the expense and development time required to shoehorn the full set of OLE functions into their Windows applications.

Not worth it

"We looked at it and decided it was not worth it," said Alex Morrow, product line architecture manager at Lotus. Instead, he said Lotus would incorporate full OLE 2.0 functionality in its next generation of applications, which could be designed from the ground up to support OLE 2.0 functions.

A number of developers said they see the benefits of OLE but do not see the need to act on it now.

In fact, while Microsoft touts 250 developers currently working on OLE 2.0 applications and cites 100 shipping OLE-enabled applications, Gartner Group counts only 40 shipping applications that include new OLE 2.0 functions.

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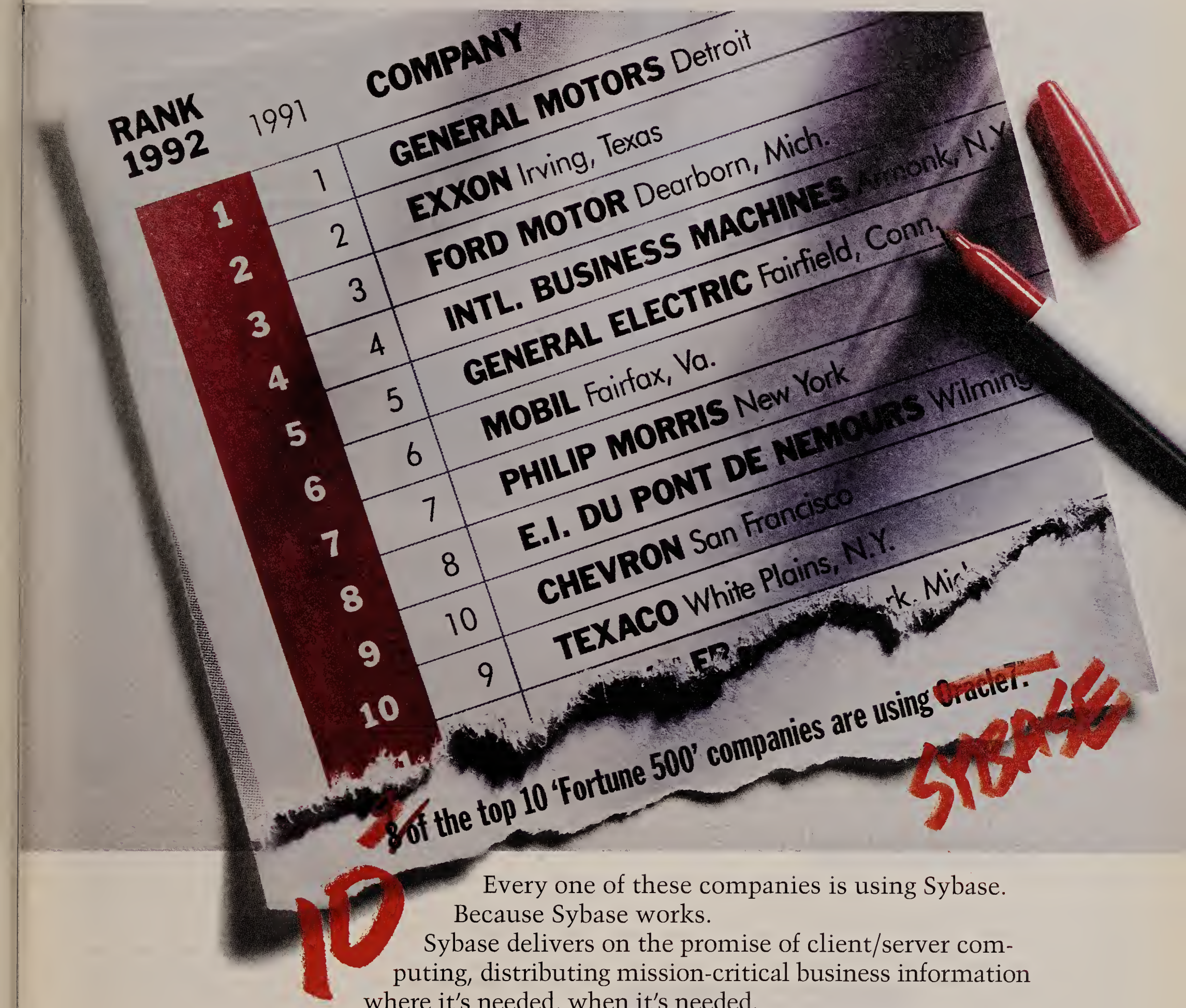

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Digital

CONTINUED FROM PAGE 1

billion annual expense reduction and the news that it would replace its 20-year-old, much-criticized matrix management structure with a plan that stresses individual managers' accountability for the success of their business units.

Digital's matrix management structure relied on a complex web of interdependent groups to make decisions. As a result, Chief Executive Officer Robert Palmer promised a difference in Digital's "agility and decisiveness."

Digital's ability to turn around hinges on the elimination of its former management structure, said Frane Romano, an analyst at Aberdeen Group in Boston. "To that extent, it's very heartening."

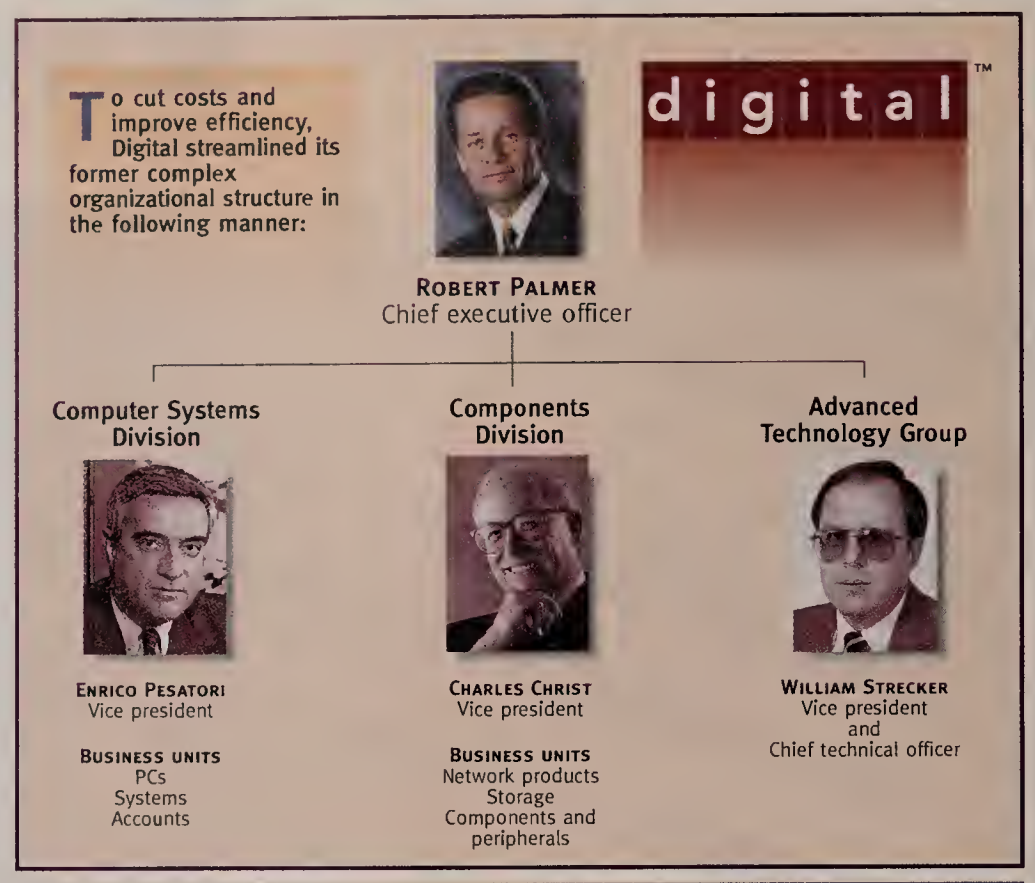
Unresolved issues

But users voiced the following concerns:

- Doubt that Digital can evolve its culture toward one of accountability.
- Concern that cutting 20,000 employees in one year will diminish sales support and destroy morale.
- Disappointment in the lack of a vision statement and details on how Digital will increase revenue.

"They still haven't said how they plan to respond to competitive pressures," said Ray Sasso, chief information officer at J. R. Simplot Co. in Boise, Idaho. "It's unclear whether this is a step toward recovery or more managing of the downward spiral."

Execution, users said, is everything. "If the [managers] at the top can be really and truly tough-minded, then they can do this," said Tony Carrato, a representative of the Digital Equipment Computer Users Society. "But the board has to be prepared to hold their feet to the fire. 'Accountable' means 'do well or lose your job,' not 'do well or we'll reorganize.'"



Other highlights of the July 14 announcement include these key changes:

- Accelerated layoffs of 20,000 positions in 12 months. Final head count: 65,000.
- Three additional business units: Multivendor Customer Services (John Rando), Digital Consulting (Gresham Brebach) and Semiconductor Operations (Ed Caldwell).
- Each business manager is responsible for bottom-line performance.
- A restructuring charge of $1.2 billion in fiscal 1994 fourth quarter.
- Limitation of direct sales to largest customers.

Palmer said in May that large-scale layoffs would be possible only by selling off whole businesses. But last week, he said the bulk of the cuts will come from dismantling the infrastructure that supports the current structure.

In addition, many observers had expected the sales force to be a prime place for cuts, and Palmer reiterated that Digital will service only large accounts directly. However, he said by the end of fiscal 1995, sales positions will represent a larger percentage of Digital's total overhead expenses than they do today.

Indirect sales account for only 33% of total sales, but Palmer's goal is 50% by year's end and more than 60% by next year.

Death of a company?

Some customers said the cuts were too deep. "I'm very concerned about how morale goes," Cloninger said. "I'm feeling like [Palmer] very well may have killed the company" with these layoffs.

Starkly missing from the description of the organization was any mention of software, although Digital said it would continue to support its three operating systems and software frameworks under the systems division.

Separately, Palmer said the fate of the Rdb database would be announced by the end of the quarter. "The decision has been made, but we're not ready to divulge the outcome," he said. As for asset sales, Palmer said storage negotiations are continuing.

"The clear question," Carrato said, "is are they simply reorganizing deck chairs on the Titanic, or are they building a new boat?"

Cuts and bruises

From Wall Street's perspective, Digital's accelerated layoff plan and cost-cutting were a welcome sign. Missing, however, was a plan for growing revenue.

"When you reduce an additional 20,000 people, the question is what happens to the revenue stream," said Michael Geran, an analyst at Pershing & Co. in Jersey City, N.J.

Enrico Pesatori, vice president of the Computer Systems Division, will brief analysts this week on details of the turnaround plan. Some analysts said they see signs of growth from Digital's Alpha AXP 32-bit machines.

The restructuring charge was also slightly higher than expected, at $1.2 billion. That plus an asset write-down "will reduce DEC's book value by $11.40 to $11.75. Quite frankly, that's sizable," said Shao Wang, an analyst at Smith Barney Shearson, Inc. in New York.

Analysts also voiced surprise at the news that Digital would fund its restructuring completely from internal sources.

After the announcement, Digital's stock fell 1¼ points, and Standard & Poor's dropped the company's bond rating. —*Mary Brandel and Craig Stedman*

Gupta bets profits on desktop development tool

By Melinda-Carol Ballou

In a gamble to gain mind share in the client/server tools market, an embattled Gupta Corp. will begin distributing 50,000 free copies of a new desktop version of its development software this week. Dubbed SQLWindows Solo, it will include a single-user version of Gupta's SQLWindows 5.0 development tools and SQLbase database.

For corporate developers, this means cutthroat prices and the further commoditization of a competitive market.

Ultimately, industry analysts predict the move may cause a market shakeout on the low end and could eliminate vendors such as Borland International, Inc. before they even ship products. Borland tools targeting the client/server low end are expected by year's end.

Gupta "was asleep for years, and Powersoft came in and ate their lunch," said Mark Hunter, president of the Southern California Gupta Users Group in Glendale, Calif. "I'm glad to see Gupta's finally waking up."

Source: Meta Group, Inc., Westport, Conn.

Gupta's desktop tools will ultimately be priced at $99. KnowledgeWare, Inc. has priced its ObjectView tools at $199, while market leader Powersoft Corp. sells a desktop version of its PowerBuilder for $249.

Time to get recharged

On shaky ground, Gupta needs a boost. It announced losses last week for the previous quarter and said it expects to post another loss for the fiscal fourth quarter, which ends Sept. 30.

The company hopes to turn a profit in the following quarter, with revenue generated from its higher-end tools and SQLbase 6.0, due out this fall. The new database release and higher-end tools will let Gupta target high-end client/server development, company officials said.

"We're determined to seed the market with SQLWindows," said Phil Ressler, Gupta's vice president of corporate marketing. He said SQLbase 6.0 will add features such as stored procedures and database triggers to enable support of more transaction-intensive tools.

Industry analysts said it is a bold strategy and may actually help to get the company back in the running. But at the same time it may further commoditize the market.

"Regardless of how Gupta, Powersoft and KnowledgeWare would like to call themselves 'high-end,' [the price war] pulls them into being low-end players. Their success to date has been on an entirely different model of profit margins, and they're going to have to change that," said Tim Harmon, an analyst at Meta Group, Inc. in Burlingame, Calif.

West Coast senior correspondent Kim S. Nash contributed to this story.

Informix ships new tools. See page 77.

IBM revenue plan

CONTINUED FROM PAGE 1

its third in a row after a series of huge losses—they said revenue growth is still elusive due to falling mainframe prices and weak increases in PC sales.

IBM's second-quarter profit should be in the $400 million range, analysts said (see chart). But revenue will likely be flat with last year's level after discounting the 1993 sales of IBM's former Federal Systems Division, the analysts added.

Some users in the dark

At the Guide gathering, Gerstner "talked about the problems of technology changing so fast that [customers] don't know what we're going to use 18 months from now, and I kept expecting some answers, and I didn't get any," said Jerry Rappard, assistant director of technical support at the Kansas Department of Social and Rehabilitation Services in Topeka.

Trending up?

While revenue growth may be hard to come by, financial analysts expect IBM to remain profitable

*Industry estimates
**Includes restructuring charge of $8.9B

"IBM's strategy is not completely clear to me," added James Pitchell, director of information technology at Southern New England Telephone Co. (SNET), a phone company in New Haven, Conn. "Gerstner said he'll take us where the customers lead. It will be interesting to see where he thinks that is."

He said IBM has an opportunity "to reestablish itself" with shops that are trying to combine mainframes and client/server systems. "Those of us with major legacy systems haven't found anyone that can tell us how to get there yet."

However, one potential pitfall is a reduced service level that has accompanied IBM's recent job cutbacks, Pitchell noted. SNET has seen the number of IBM workers on its account drop from almost 10 to "a couple," he said. "That's a problem [Gerstner] has to deal with."

But virtually all Guide attendees interviewed said IBM appears better off than before Gerstner took over as chairman. He drew praise for recentralizing IBM, reducing costs, remaking the sales force along vertical industry lines and fostering a more customer-driven attitude.

"It's nice to be able to do business with IBM [as a whole] again" rather than with separate units, said Linda Mainord, Guide's president. IBM also "is a little more laid-back and away from the suits."

John Foy, senior vice president of the corporate information department at New York Life Insurance Co. in New York, said IBM's expense reduction efforts are encouraging. He credited Gerstner for showing "a much better appreciation of the mainframe and its role in the enterprise" than he did at a meeting with a group of invited customers in Chantilly, Va., last summer [CW, Aug. 2, 1993].

Yet IBM's reliance on cost-cutting is making users and analysts wary. "Until they grow revenues, the turnaround is not complete," said David Wu, an analyst at S. G. Warburg & Co. in New York.

IBM turned in a surprising 6% revenue increase in the first quarter, but that now appears to have been an "aberration," said William Milton Jr., an analyst at Brown Brothers Harriman & Co. in New York. Revenue for the rest of the year should be "approximately flat," he said.

The mainframe and storage businesses continued to decline in the second quarter. Meanwhile, PC revenue may be limited to single-digit growth for below rival vendors, Milton and Wu said.

IBM's future looking brighter. See page 69.

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Novell taps Proginet for NetWare-host links

Mainframes to get native IPX transport

By Elisabeth Horwitt

Novell, Inc. is turning over to a small Long Island firm much of its ongoing work to integrate NetWare with IBM hosts, the company announced last week. Product announcements are scheduled for the fourth quarter.

Proginet Corp. in Uniondale, N.Y., will take over the development and support of the mainframe piece of Network Navigator, a software and data distribution package acquired by Novell a couple of years ago. Novell will continue to develop and market the NetWare version of the product, which both companies will sell.

A good choice

Novell said it wanted to off-load its mainframe work to concentrate on its main server business. It chose Proginet because it is a company with strong "MVS and file-transfer experience and a track record in development and support," said Barbara Goldworm, a director of product management at Novell.

Proginet will also work with Novell to implement Novell's IPX transport protocol on IBM mainframes, which will eliminate the need for NetWare clients to use SNA gateways to access IBM hosts, according to both companies.

While major Novell shops may find an IPX link to the mainframe useful, most multivendor installations are looking more at TCP/IP as their corporate communications standard, said Val Sribar, a program director at Meta Group, Inc., a Westport, Conn., consultancy.

Product introductions

Proginet plans to introduce an enhanced Network Navigator in the fourth quarter. It will provide, for the first time, native file transfer between an IBM mainframe and NetWare server via IPX, said Joseph Mohen, Proginet's chief technical officer. Proginet will also enhance the product with features such as advanced recovery and queuing, he added.

Also in the fourth quarter, Proginet plans to announce a "bare bones" product for synchronizing passwords across Novell's NetWare Directory Service (NDS) and IBM's Resource Access Contol Facility (RACF) mainframe security system, Mohen said.

"The NDS/RACF synchronization is a big request from our customers," who want the single log-on and user administration that NDS provides to be extended to the mainframe side, Goldworm said.

IBM to add commonality to NetView platforms

By Steve Moore

With its upcoming new version of LAN NetView, renamed NetView for OS/2, IBM will give users a choice between equivalent client/server network management systems that run on Unix or PC platforms.

When that happens, it will be a boon to companies such as Fireman's Fund Insurance Co. in Novato, Calif., which wants to migrate to an OS/2 client/server setup, said Virgil Pittman, senior vice president of systems.

"We've been in this client/server world for a number of years, and we've had to write a lot of our own network management applications," Pittman noted. Assuming the IBM OS/2 product has the same functionality as his homegrown software, Pittman said, "If it's cheaper, the vendor is maintaining it and it becomes a standard in the industry, then I would definitely move to that product."

Preaching to the converted

When it first becomes available late this year, however, NetView for OS/2 will be "a remote branch solution for true blue IBM customers who may have LAN Server and a bunch of OS/2 PCs," said Dave Passmore, a principal consultant at Decisis, Inc. in Herndon, Va. "NetView for OS/2 is really a port of NetView/6000 onto the OS/2 platform, which has not been terribly successful because of the lack of applications that will run on it."

While IBM declined to comment about its third-party application development plans for NetView for OS/2, Passmore pointed out that it is relatively difficult to move NetView/6000 applications to OS/2 because of significant differences in the underlying operating system application programming interfaces.

Across the board

NetView for OS/2 adds yet another platform to IBM's NetView line, which now extends from Windows machines to mainframes. "The DOS/Windows environment is not really suitable for network management because it's unitasking," said Atul Kapoor, principal consultant at Kaptronix, Inc. in Haworth, N.J. "OS/2 is a much stronger platform for SNMP network management, especially in an enterprise context." At the same time, OS/2 provides a more simple alternative to the Unix platform.

Roger Rea, a senior marketing representative at IBM's networking software division, declined to say if IBM will support the Desktop Management Interface in NetView for OS/2.

Rea said NetView for OS/2 will use Simple Network Management Protocol (SNMP) rather than the Common Management Information Protocol used by its predecessor, LAN NetView.

Token Ring

CONTINUED FROM PAGE 1

While users are encouraged by these moves, they said they want more than low-cost adapters and extensions to existing technology. They want IBM and other vendors to devote more energy to developing Token Ring switching products that will upgrade the path to ATM. Several vendors already produce such products for the Ethernet market.

"Token Ring is clearly the orphan of the switching market, which is definitely becoming increasingly frustrating to users," said Thomas Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J.

"We're concerned that in its efforts to offer every other high-speed networking technology under the sun, IBM may be losing its Token Ring focus," said David Pinkard, a technical consultant at Mallinckrodt Medical, Inc. in St. Louis.

"The established hub and router vendors are clearly not addressing Token Ring in a timely fashion," said Graham Morrison, project leader for network design and engineering at Blue Cross/Blue Shield in Hartford, Conn.

Centillion's Speed Switch 100, is already garnering a fair amount of attention. The Speed Switch 100 has a 3.2G bit/sec. ATM backplane with 1.2G bit/sec. switches on up to six modules for a total throughput capacity of more than 10G bit/sec. According to Centillion, the switch is compatible with existing Token Ring bridges and routers.

The switch is slated to ship in October for $9,995, which includes the basic chassis and one four-port switch module. ATM and Fiber Distributed Data Interface modules will also be available for backbone connections with prices starting at $4,495. Additional Token Ring modules cost $6,495.

Vendor offerings

Today, only Standard Microsystems Corp. in Hauppauge, N.Y., offers a Token Ring switching hub. Madge and IBM say they will offer a stand-alone Token Ring switch by year's end.

For the moment, analysts said Centillion has the clearest Token Ring switching strategy, which when coupled with aggressive pricing, should enable it to succeed as a start-up.

"It's clear that there is a major lack of attention on Token Ring from the Ethernet switching guys, which makes [Centillion's] product and strategy very interesting and viable," said Jennifer Pigg, an analyst at The Yankee Group in Boston.

Blue Cross/Blue Shield plans to beta-test the Speed Switch as a possible replacement for its two Cisco Systems, Inc. 7000 routers, which it is using to route data traffic among its 20 Token Ring subnets. The company hopes the switch will provide more cost-effective bandwidth relief than the roughly $140,000 routers.

"If the technology proves stable, I am not adverse at all to moving away from Cisco and IBM and going with a start-up," Morrison said. "We have a long legacy with IBM, but I just don't think they understand the immediacy and criticality of networking."

The Travelers Corp. is also planning to test the Centillion switch as a means of alleviating congestion in its bridged Token Ring network, said Steven Toce, an engineering consultant at the Hartford, Conn.-based insurance firm.

"We expect at least a 25% performance boost by eliminating our bridges and moving to switching," Toce said. "We have a close relationship with IBM, but we have to keep our options open. If this switch works as advertised, we'll use it."

Cautious approach

However, Mallinckrodt remains wary of implementing a new technology from a start-up. "Even if you're a Token Ring shop salivating for switching technology, I'm not sure it's worth the risk to take a shot on an untried company, no matter how attractive it looks," Pinkard said.

Meanwhile, IBM claims its focus on evolving Token Ring users remains strong. Earlier this year, it shipped full-duplex-enabled Token Ring adapter cards, and users can expect to see a full-duplex Token Ring concentrator by year's end.

"IBM is wholly committed to continuing to expand the Token Ring environment," said Laura Knapp, senior networking systems adviser at IBM in Research Triangle Park, N.C.

Hospital installs ATM. See page 60.

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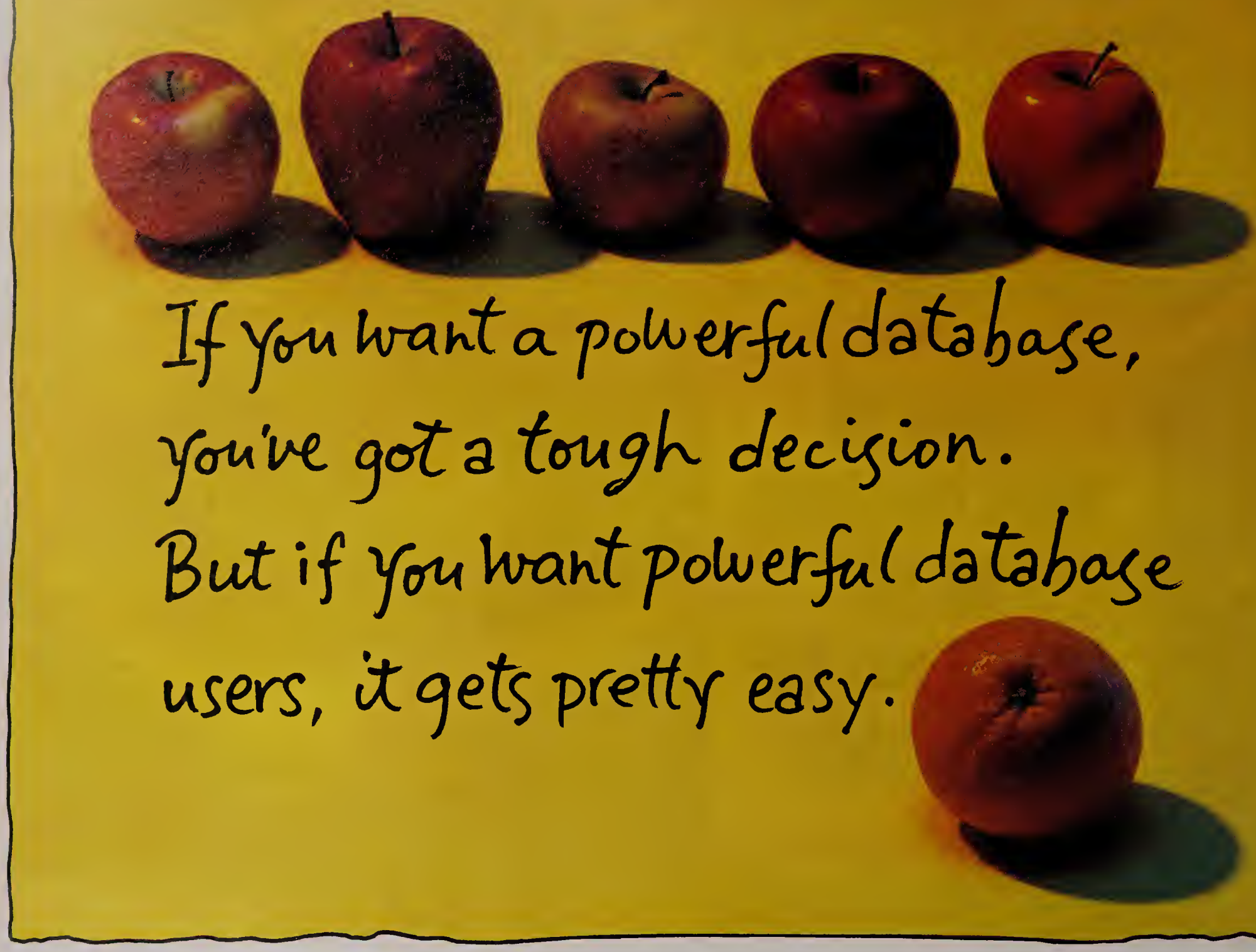

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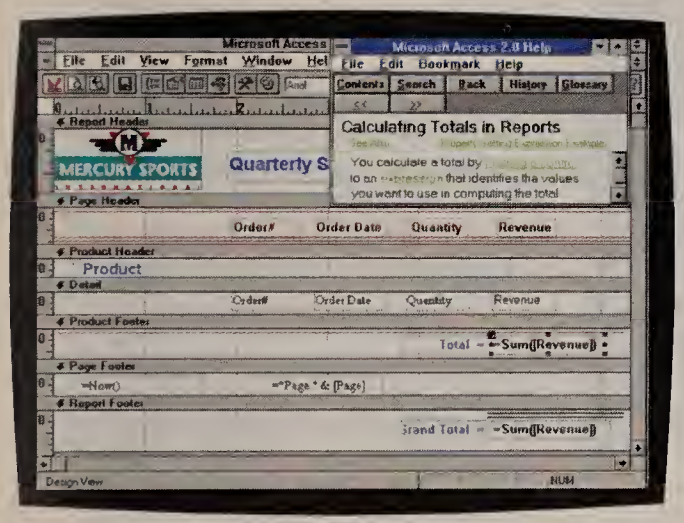

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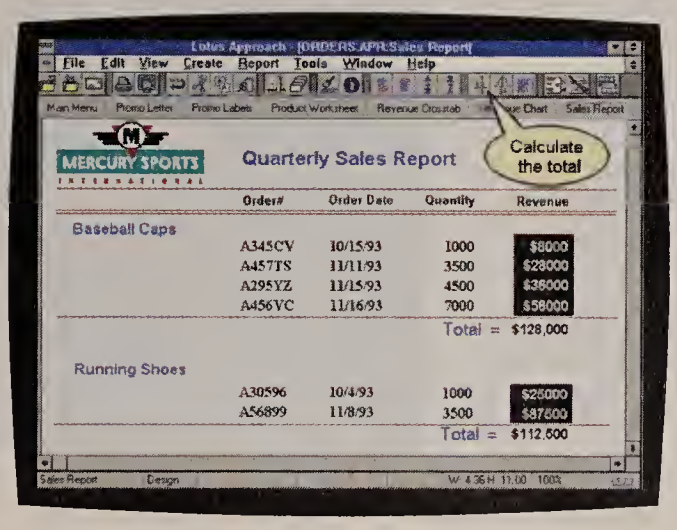

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rnational Inc. *MarketProbe International, New York, NY, February, 1993. †*PC Computing*, July, 1994. ††*Infoworld*, April 4, 1994.

Computerworld Exclusive

Seymour R. Cray

After 40 years, the father of supercomputing can still visualize the future

No major branch of information processing has been so dominated by the thinking of a single person as has supercomputing by Seymour R. Cray. He started out designing prototypes for the Univac 1100 series in the early 1950s, moved on to Control Data Corp. and later founded Cray Research, Inc. Today, he is head of Cray Computer Corp. Through it all, the reclusive but brilliant and tenacious computer designer has been driven "to make the fastest computers in the world."

But since Cray Computer spun off from Cray Research in 1988, progress has been slow, owing mostly to Cray's choice of gallium arsenide as a replacement for the slower silicon used in earlier vector supercomputers. At least one analyst has said that financially strapped Cray Computer is "in a downward spiral." But in a recent interview with *Computerworld*'s Gary H. Anthes, senior correspondent in Washington, and technical editor Charles Babcock, the 68-year-old Cray said he has no intention of relinquishing the title of Speed King.

Q: What is holding back the widespread use of so-called massively parallel supercomputers?
A: There are two issues. One is software — it's hard to program a lot of processors. And the other is hardware — how do you get good communications? When you have a lot of processors interconnected without a common memory, it's very difficult to get high transfer rates.

Q: Will massively parallel machines eventually supplant the vector supercomputers?
A: Right now, most scientific applications lend themselves to floating-point calculations and a common memory. Massively parallel will take a bite here and a bite there out of that market, but it will get harder and harder, and there will be something left over. Maybe that's 20% of the market.

Q: What else is coming in high-performance computing?
A: We will have a GFLOPS in a desktop computer very soon. Then supercomputer centers will have a more specialized role than just running 500 users a day in time-sharing mode. They will run a few huge jobs, but the rest will be better off on the desktop.

Q: Will you build such a desktop machine?
A: No, that's being adequately covered.

Q: What is the future of silicon processors?
A: I think somewhere around 500 MHz they are going to run into really basic problems. Then they will have to use gallium arsenide or something else. That will provide a window, but neither silicon nor gallium arsenide will do the job in the long run.

Q: Why has Cray Computer gotten off to such a slow start?
A: We couldn't get any of the machine tools we needed, so we had to develop them. I tried three times to work with gallium arsenide facilities elsewhere but was not successful. So we now have our own gallium arsenide foundry here. What we ended up with was a very vertically integrated company, more so than I would have liked.

Q: Are you ready to release commercial products?
A: The Cray 3 was the vehicle for getting all these things hooked together, a prototype for the Cray 4. As a result, we came too late to market; it wasn't dramatic enough [in performance] at the point in time we could deliver it. But there does seem to be an opportunity now to move on to the Cray 4 because we have the infrastructure in place.

Q: What will the Cray 4 be like?
A: It will perform the same functions as existing $24 million [supercomputers] for $4 million. It is a conventional multiprocessor vector machine with a common memory, a close cousin to the Cray 3 and the C-90 and Y-MP [from competitor Cray Research]. It will have a 1 nsec clock period [yielding 1,000 MIPS per processor]. The $4 million machine would have eight processors and 4G bytes of very fast [20 nsec static random-access] memory.

Q: When will it be available?
A: Early next year; we want to demonstrate a system by year's end.

Q: What can you say about the Cray 5?
A: It will have 2,000-MHz processors [yielding 2,000 MIPS per processor].

Q: Cray Research has said its new vector supercomputer will be out in late 1995 or early 1996. How will its performance compare to the Cray 4?
A: I think it is only half as fast [as the Cray 4]. I'm looking forward to that competition because I think a factor of two is enough that we can compete.

Q: Given the budget cuts at the departments of Energy and Defense — traditionally the biggest users of vector supercomputers — who will buy your machines?
A: Commercial customers [such as automobile, pharmaceutical and petroleum companies] and current Cray Research customers who perceive a cost-effectiveness. There are hundreds of potential customers. It just has to be better and cheaper.

Q: What is Cray Computer's financial status?

Cray, the reclusive head of Cray Computer, talked to *Computerworld* about the future of supercomputing and his current work at Cray Computer

A: We just finished an asset-based financing. We have about $40 million in assets [and] we are spending $2 million to $3 million a month. We need to get a product recognized in the marketplace to get equity financing early next year in order to keep going.

Q: Can you afford to spend $300 million-plus on each development cycle as you have for the Cray 3?
A: Oh, no. That's a onetime event. We can take our existing production capability another step beyond the Cray 4 with larger-scale integration. I'm looking for a factor of four performance improvement in each [four-year development cycle], and I think we can do it within the $3 million-per-month budget.

Q: What is your philosophy about risk-taking?
A: You have to be prepared to fail, and I have failed about half the time, I guess. But you simply have to pick yourself up and go at it again with whatever insights you've gained from failure. If you do keep trying, you will occasionally do something worthwhile. I certainly don't feel frustrated at the moment, even though there might be a number of reasons why I could.

Q: What has been your technical philosophy over the years?
A: I try to be very aggressive, and I often get into trouble. But if you don't do that, you just don't push the frontiers. [Some people are now saying] we don't need to develop new kinds of things because [microprocessors] are just going to get faster and faster; they do everything we need, so it's a waste of money and time to do anything radical. But someone had better be doing that, and that's my role.

Q: What accomplishment are you most proud of?
A: The first thing I did that I think was kind of outstanding was the Control Data 6600. At that point in time (1963), IBM imagined itself as going to completely dominate the [scientific computing] market. But the 6600 was quite successful, and I know that caused frustration among the IBM folks. There's satisfaction at having a little company be successful where a big one seems not able to.

Q: You once said you had given up using specific design tools in favor of intuition. How important is intuition in your work today?
A: It's intuition plus feedback from users.

Q: Do you use automated aids?
A: I use a Macintosh for text editing mostly; I keep all my design work there. Also, and this is kind of far out, I'm trying to learn programming again after a 25-year gap. I'm learning C++.

Q: Why?
A: I want to create a simulation [of the Cray 4] of a different kind. I have the perception of what I want, and no one else is doing it. They all kind of rolled their eyes when I suggested it, so I said, 'All right, I'll do it myself.'

Q: Do you plan to retire soon?
A: That frightens me. I will work as long as I am able. I need a successor, and I have several candidates, young people here.

Cray envisions new frontier. See page 121.
Cray 4 stakes: Ultimate risk, reward. See page 6.

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Sun hops on interactive multimedia bandwagon

By Jean S. Bozman

Sun Microsystems, Inc. and Paris-based Thomson Consumer Electronics S.A. last week announced a jointly funded business unit that will provide digital interactive video servers to phone and cable companies for consumer use with television set-top devices.

The announcement was light on specifics, stopping short of providing details about financing, organizational structure and products. More information is expected in September. However, the two firms have committed to work together for at least three years, said Alan DeClerck, director of corporate development at Sun.

Sun has been developing key multimedia server technologies for some time but signed up a partner late compared with rival Unix vendors (see chart). "They have been extremely involved with a multimedia commitment inside the company," said Frank Dzubeck, president of Communications Network Architects, Inc. in Washington. "They were also extremely vocal about it with the [telephone] and carrier companies."

Sun's contributions to the venture will include media servers to deliver multimedia and video images, back-office accounting and billing systems and systems management software, which will ensure the security and reliability of the interactive digital services. In return, Sun will receive access to Thomson's international retail sales channel, which sells Thomson's RCA-brand TV sets.

Thomson will produce the set-top devices but will gain Sun's software and hardware — as well as Sun's presence in the telecommunications market, which accounts for about 25% of its sales, Sun said.

Channel changers

Unix system vendors are rushing to team up with providers of interactive digital services and television set-top boxes for multimedia and video

Vendor	Partner
June 1993	
Silicon Graphics	Time Warner/ Scientific Atlanta*
January 1994	
IBM*	Bell Atlantic
May 1994	
Hewlett-Packard*	Tele-Communications, Inc.
June 1994	
Silicon Graphics	AT&T Network Systems
July 1994	
Digital	General Instrument*

*Set-top vendors

A little cooperation

"You have to partner with somebody else to have the technology and the expertise to do everything," said Bruce Allen, vice president of technology and business development at Thomson's U.S. division in Indianapolis.

Elements of Sun's First Person project, which was folded into Sun Microsystems Computer Corp. two months ago, will figure into the multimedia offering. "What's happening with First Person is part of an overall reshaping of some structures," DeClerck said, referring to the reorganization of SunSoft, Inc. [CW, June 27]. "But there was also a recognition that it would be great to have that technology closer to some of the business units."

Besides ensuring sales of Unix machines, interactive digital services tap new mass markets for all RISC vendors, said Rob Tholemeier, an open systems analyst at Meta Group, Inc. in Burlingame, Calif.

"The media server is the tip of the iceberg," Tholemeier said. "It's all about commerce. This is the mother of all customer management systems, the mother of all billing systems. It's the ability to track what somebody's selecting with the remote control of their TV set."

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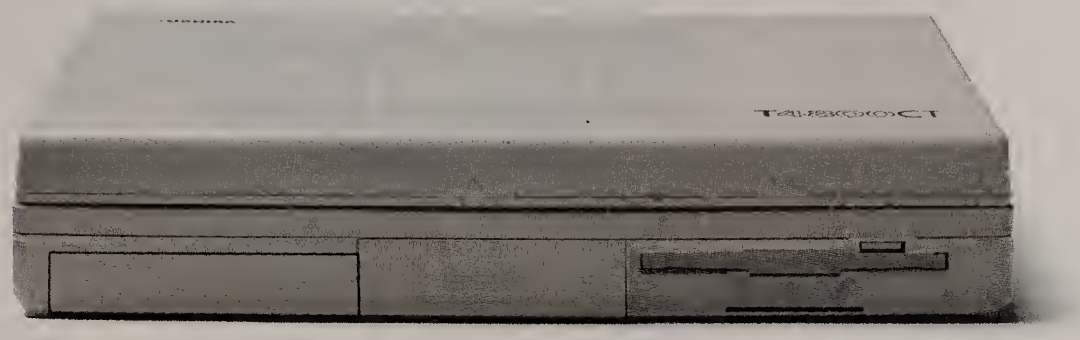

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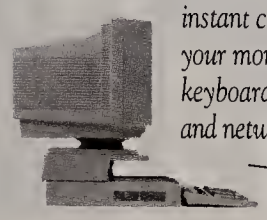

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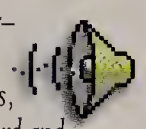

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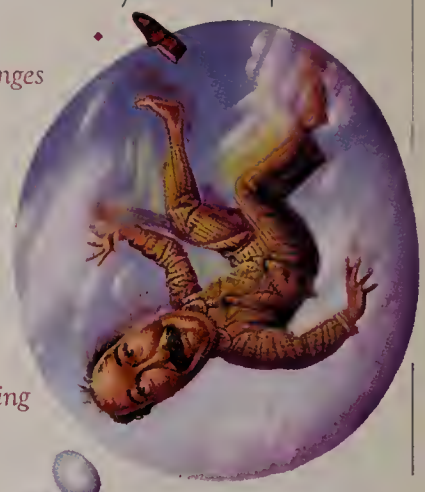

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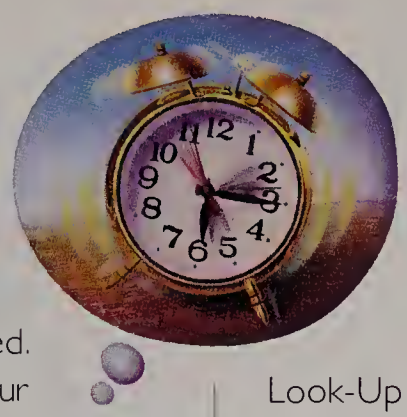

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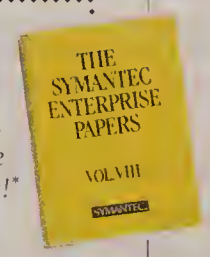

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Logistics providers enable 'virtual' firms

Users increasingly outsource IS, core operations

By Julia King

The week after Prince Michael of Kent appeared on *Larry King Live* to plug gifts and home furnishings for The House of Windsor Collection, the catalog company was deluged with 25,000-plus telephone orders from former colonists wanting everything from tins of toffee to headgear fashioned by the royal milliner himself.

Behind the scenes, the calls were fielded by U.S. workers at Memphis-based FedEx Logistics Services, which also handles all packing, shipping, invoicing and accounting for the London-based firm.

Similarly, last month, when Walt Disney Co.'s Buena Vista Films division needed to get copies of *The Lion King* to some 3,000 theatres nationwide — all on the same day — it was Advanced Logistics Services (ALS), a subsidiary of Seattle-based Airborne Express, that scheduled, tracked and made the drop-offs of the newly released film.

Both examples illustrate the growing willingness of corporations to relinquish control over operations and information systems once considered far too critical to trust to outsiders. These include sales, order processing and customer support functions, which increasingly are being farmed out to a relatively young but fast-growing breed of information technology-intensive firms known as third-party logistics providers.

From trucking to IS

Typically, these providers are spin-offs of transportation companies that have bolstered their IS capabilities to include global electronic data interchange networks, imaging and bar-coding systems and computerized inventory management systems — all of which can be linked to client companies' internal systems. Once tapped primarily to move freight, the providers are now moving to the front lines of U.S. business, in some cases orchestrating and executing virtually all of a company's operations.

"Some of the things that companies are letting us do now were unheard of five years ago," said Tom Escott, vice president of sales and marketing at Roadway Logistics Systems, the logistics subsidiary of Roadway Services, Inc. in Hudson, Ohio.

These, he said, include assembling customized computer systems for shipment from Roadway warehouses and managing delivery of components to manufacturing giants such as Ford Motor Co., General Motors Corp. and Chrysler Corp.

Market figures bear out American businesses' growing reliance on logistics companies. In 1990, the domestic market for logistics services totaled $8 billion. This year it will hit $16 billion, and by the year 2000 it is expected to increase to $50 billion, according to Bob Delaney, executive vice president of Cass Logistics Information, a St. Louis firm that tracks the logistics industry.

More and more

Outsourcing is, of course, nothing new. Companies under pressure to cut costs and focus on core business functions have been doing it for years. What distinguishes logistics outsourcing, however, is the extent to which third parties are being called on to furnish information and services that directly impact a client company's overall strategy and bottom line.

The House of Windsor, for example, makes virtually all of its strategic marketing, merchandising and financial decisions based on data generated by and then downloaded to the company by FedEx Logistics.

"Why should I reinvent the wheel and invest in a fulfillment system when the best in the industry can do it for me?" reasoned House of Windsor President Brad Larschen. "This way, we can focus on marketing and merchandising."

Executives said contracting out functions such as telemarketing and order processing along with warehousing and distribution can work to speed products to market. Additionally, it enables companies to enter new markets with minimal overhead costs.

The House of Windsor, for example, can guarantee 48-hour shipment of all orders that come into FedEx Logistics' Memphis facilities because all of its products are also warehoused there.

Rentrak Corp., a Portland, Ore., distributor of prerecorded videocassettes, guarantees next-morning delivery on telephone orders received as late as 2 a.m. at Airborne Express' ALS private airport in Wilmington, Ohio. Last month, Rentrak signed a three-year, multimillion-dollar agreement with ALS under which the logistics company manages Rentrak inventory housed in an ALS warehouse at the airport. Additionally, ALS tracks all product shipments to Rentrak's 3,000 domestic outlets.

Logistics companies themselves also have begun to outsource certain operations. ALS, for example, recently contracted out the telemarketing and customer support services it offers to customers to Advanced Interfaces Services, a subsidiary of Distribution Solu-

Airborne Express *combines warehousing, distribution and transportation services at its Airborne Commerce Park hub in Wilmington, Ohio*

The outsiders

Thirty-seven percent of Fortune 500 companies now employ one or more third-party logistics providers, according to a study by Northeastern University Professor Robert Lieb.

Hardly there

In other, less frequent cases, companies are outsourcing 100% of their operations so that they are nothing more than virtual organizations.

Turnstone, a subsidiary of Steelcase, Inc., is one such example. The company markets office furniture and products through catalogs designed and printed by a third party.

Customers phone in orders to a toll-free number staffed by a telemarketing firm in Denver, which in turn transmits shipment data to warehouses operated by Exel Logistics, Inc. in Westerville, Ohio. From there, products are shipped by Exel or by another carrier with which it has subcontracted.

The bottom line, said Gerald Ross, a partner at Change Lab International, a consulting firm in Greenwich, Conn., "is we are witnessing the emergence of the American *keiretsu* and a whole new species of information systems that can serve cross-functional teams pulling together an integrated solution." — *Julia King*

CDPD Forum to spur standard consensus

By Michael Fitzgerald

Consortia rarely generate anything quickly other than paper pronouncements, but observers say the CDPD Forum, Inc. will light a fire under the slow-moving Cellular Digital Packet Data (CDPD) protocol.

CDPD at one point had been projected to offer nationwide service by now, but delivery has slipped into late 1994 or early 1995 due to equipment delays.

Andrew M. Seybold, editor in chief of the "Outlook on Mobile Computing," a newsletter in Brookdale, Calif., noted that vendors can more effectively address issues such as how to do nationwide seamless roaming if they work together in an open forum.

Users said the forum reassures them that the multivendor, multi-industry standards effort will indeed come together if the forum can deliver on its promises.

"The more vendors you have [cooperating], the more it [can] address issues like interoperability and roaming," said Dineen Cooper, manager of wireless telecommunications technologies at United Parcel Service, Inc. UPS, the world's largest cellular user, is eyeing CDPD as wireless data technology it might adopt.

Waiting for standards

John Woods, PC systems specialist at Chevron Information Technology Co. in San Ramon, Calif., said the forum appears to fulfill his requirement that there be "an industrywide consortium in place, with standards, before I'm going to commit my limited resources to investing [in wireless] on anything other than a regional basis."

Launched in April, but only announced late last month, the CDPD Forum consists of 57 players from the services, infrastructure, system integration and end-user equipment areas of the nascent CDPD wireless communications area [CW, July 4]. Charles Parrish, general manager of mobile data services at GTE Corp. in Atlanta, a forum member, said the forum would help vendors from each side of the CDPD business understand the technical issues involved in deploying the protocol.

"We have a lot of interoperability stuff already done .... But we've all got things we can do to make it better," Parrish said. He declined to give specifics but promised an uptick in CDPD announcements as proof, as well as faster generation of new features.

This in turn should help CDPD vendors better position themselves against the possible threat of Personal Communications Services (PCS), an upcoming technology that will both complement and compete with CDPD.

PCS is a new allotment of wireless spectrum that the federal government will auction off later this year. It will offer more features and cost much less than cellular service does today. Cellular technology is capable of practically all the features PCS will offer, however, which is why vendors think speed is of the essence.

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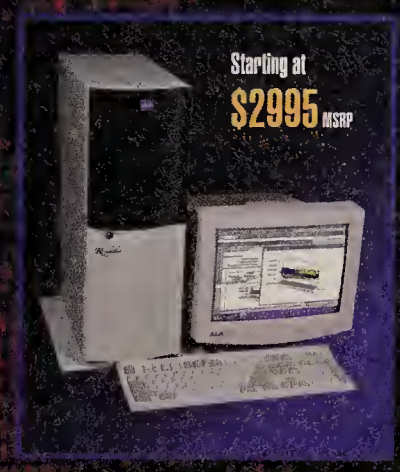

If you're responsible for a small or medium-sized network, consider the ALR REVOLUTION MP™. In its base configuration, it's a low cost 100-MHz i486DX4™ powered system. With four 32-bit PCI local bus slots, six 32-bit EISA slots, and room for up to 12-GB of data storage, it offers plenty of room for high speed disk arrays, 32-bit LAN adapters, and other network expansion options. As your network grows, the DX4 processor module can easily be replaced with a 90- or 100-MHz Pentium processor. And when your needs increase even more, you can add a second Pentium processor, converting the Revolution MP into a true, symmetrical dual processing super server!

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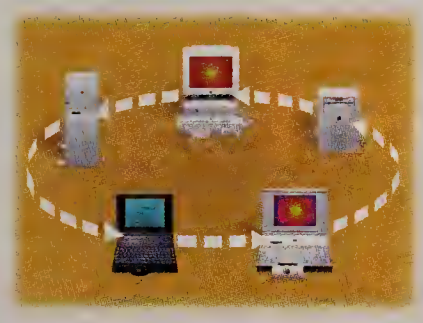

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Briefs

Magic doesn't dazzle

Magle Software Enterprises Ltd. said sales and revenue for the second quarter, which cnded June 30, are expected to increase 35% to $5.25 million from $3.87 million. Operating income is not expected to increase, however, due to increased hiring efforts. Also, investment portfolio losses of around $450,000 will adversely affect the net income for the company, although it will still report a profit. The firm also expects a further delay in its Magic Windows rapid application development tool, which will not ship this year as planned. The full financial results and exact timing of the release will be announced next month.

AMD settles suits

In a settlement expected to cost it an estimated $34 million, **Advanced Micro Devlees** last week agreed to settle all class-action securities lawsuits and a derivative case pending against the company and certain of its cxecutives. The deal must be cleared by AMD's board of directors and the U.S. District Court in San Jose, Calif. The suits relate to the company's announcement of its Am486 family in September 1993.

Cisco to buy Newport

Cisco Systems, Inc. last week said it will acquirc **Newport Systems Solutions** for just under 4.2 million shares of Cisco stock. Cisco gains software-based routers for Intel Corp.-based PCs.

Symantec gains tools

Symantec Corp. has agreed to acquirc **Intec Systems Corp.** in St. Louis, which builds an enterprisewide mobile computing system that addresses remote users. Symantec intends to integrate that technology into its Act product family, expanding its PC LAN management tool line. Symantec will issue 130,000 shares to fund the purchase.

Dell foresakes retail for direct approach

By Jaikumar Vijayan

Dell Computer Corp.'s recent interest in alternative distribution channels is tapering off quite dramatically. Last week the direct-marketing giant announced it will discontinue sales of all its products through the retail channel. It plans to refocus on its traditional direct-sales and mail-order business models.

Effective immediately, Dell will stop selling through its current retail partners in the U.S., Canada and Europe: CompUSA, Inc., Sam's Club, Inc., Best Buy Co., Price/Costco, Inc. and retailer PC World.

The company's sudden exit from retail sales comes roughly four years after it began using the channel to diversify from its direct-marketing approach. Some analysts view the move as an indication of Dell's renewed confidence in the direct channel, combined with an inability to expand its distribution network.

"They simply did not understand where they were making most of their money," said David Wu, a computer industry analyst at S. G. Warburg and Co., a brokerage in New York. "Dell discovered they were losing their shirt in the retail business and decided to go back to [what] it is good at."

Dell cited minimal retail sales offset by a strong resurgence in its consumer-direct business as the reasons for pulling its hardware off retail shelves. Dell's direct-mail business accounts for 87% of its sales. In contrast, its retail partners contributed less than 2% of its overall sales, while value-added resellers (VAR) made up the rest, according to Dell.

"We were not hitting margins that were acceptable to us," a company spokesman said. He hinted that Dell had not been very comfortable in an unfamiliar area of business. "We didn't build to stock very well. That is not one of our strengths," he said.

Dell, however, will try to maintain some sort of presence in retail stores, the spokesman added. The company is mulling setting up kiosks in retail stores, where potential customers can browse through Dell catalogs and order systems directly from the firm.

Good response

Dell's pullout from retail stores was received favorably by Wall Street. Its share price saw a slight increase following the announcement. The move comes at a time when analysts are cautiously applauding the company's recent turnaround efforts, which have led to a jump in gross margins from 6.5% to 22.2% and a decrease in costs as a percent of sales from 20% to 14.3%.

The doubters

Some were not convinced this would be enough. "Customers like to kick the tires before they buy anything," said Randal Giusto, an analyst at BIS Strategic Decisions in Norwell, Mass.

Dell's decision to pull out of what is sometimes considered a vital route to the consumer market did surprise observers, but few predicted that it would have any immediate negative impact on the company's recent turnaround efforts.

"Their foray into the retail channel perhaps was to get more of the gravy," Giusto said.

Analysts added that while Dell needs to seriously expand its distribution and support infrastructure for its server and other high-end products, it had already gained considerable market and mindshare for its PCs through direct marketing and mail order.

Currently, Dell is in the process of recruiting VARs and systems integrators to distribute its server-class products, which it predicts will be a high-growth area in the next few years.

Wellfleet/SynOptics deal could box out third parties

By Stephen P. Klett Jr.

■ The megamerger of Wellfleet Communications, Inc. and SynOptics Communications, Inc. will leave most of their alliances with third-party suppliers intact — at least for the time being. But observers wonder if users will be left holding the bag as some of these deals fall by the wayside down the road.

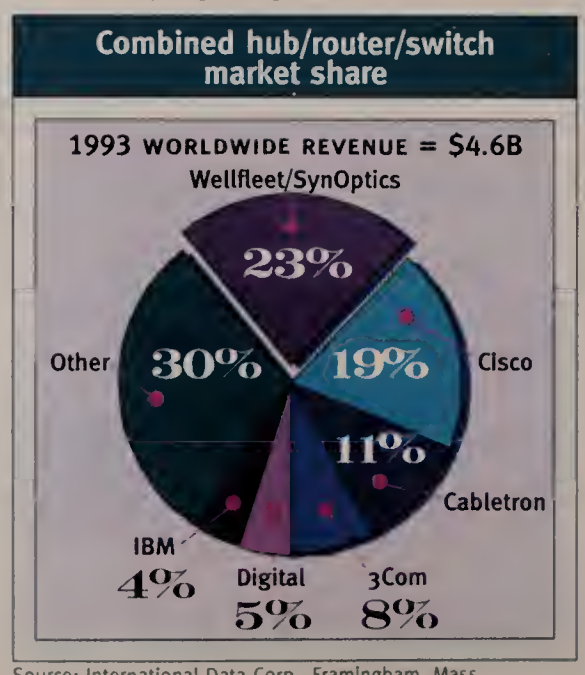
Already, for example, Wellfleet's deal to collaborate with Fore Systems, Inc. on Asynchronous Transfer Mode (ATM) switching technology is all but dead because Wellfleet will gain those wares from SynOptics.

"We expect tactical relationships such as Fore will die slow deaths," acknowledged Gary Bowen, senior vice president of marketing and field operations at Wellfleet in Billerica, Mass. "But the merger will not have a material effect on our other hub relationships." In fact, Bowen claimed the company is in the midst of signing a partnership with another hub vendor, which he declined to name.

Wellfleet currently has alliances with several hub vendors that sell Wellfleet router modules with their hubs. These vendors include Bytex Corp., Lannet, Inc., Hughes LAN Systems, Inc. and Optical Data Systems, Inc. SynOptics, for its part, resells Cisco Systems, Inc. router modules for its Lattis System hub [CW, July 11].

The death of the Fore/Wellfleet deal will not necessarily cause hardship for users because no products resulted from the deal, and SynOptics' products are considered to be just as strong in ATM.

However, should some of the other relationships — particularly the SynOptics/Cisco deal — fall apart down the road, customers would definitely feel the pinch. SynOptics executives denied this will happen anytime soon.



Source: International Data Corp., Framingham, Mass.

Battle lines

Still, some pointed out that the Wellfleet/SynOptics merger makes them one of the two major competing camps in the industry. The other is Cisco/Cabletron Systems, Inc., which earlier this year formed a close development deal. Some analysts consider 3Com Corp. to be a third camp because it offers hub, routing, switching and ATM technology. By merging, the vendors may force users to choose one of these major camps and may wind up alienating some of their customer base.

"The possible losers are people with a mix or those [who] bought Wellfleet routing from another hub vendor," said Valentin Sribar, program director of global networking strategies at Meta Group, Inc. in Reston, Va.

"I'm really surprised [Wellfleet and SynOptics] took the chance of alienating their customers that use Cisco or Cabletron equipment," said Fred McClimans, principal analyst at Decisis, Inc. in Herndon, Va. Together, SynOptics and Cisco represent as much as 70% of the installed base.

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80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
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(b) Netware	(f) Windows NT
(c) OS/2	(g) Windows
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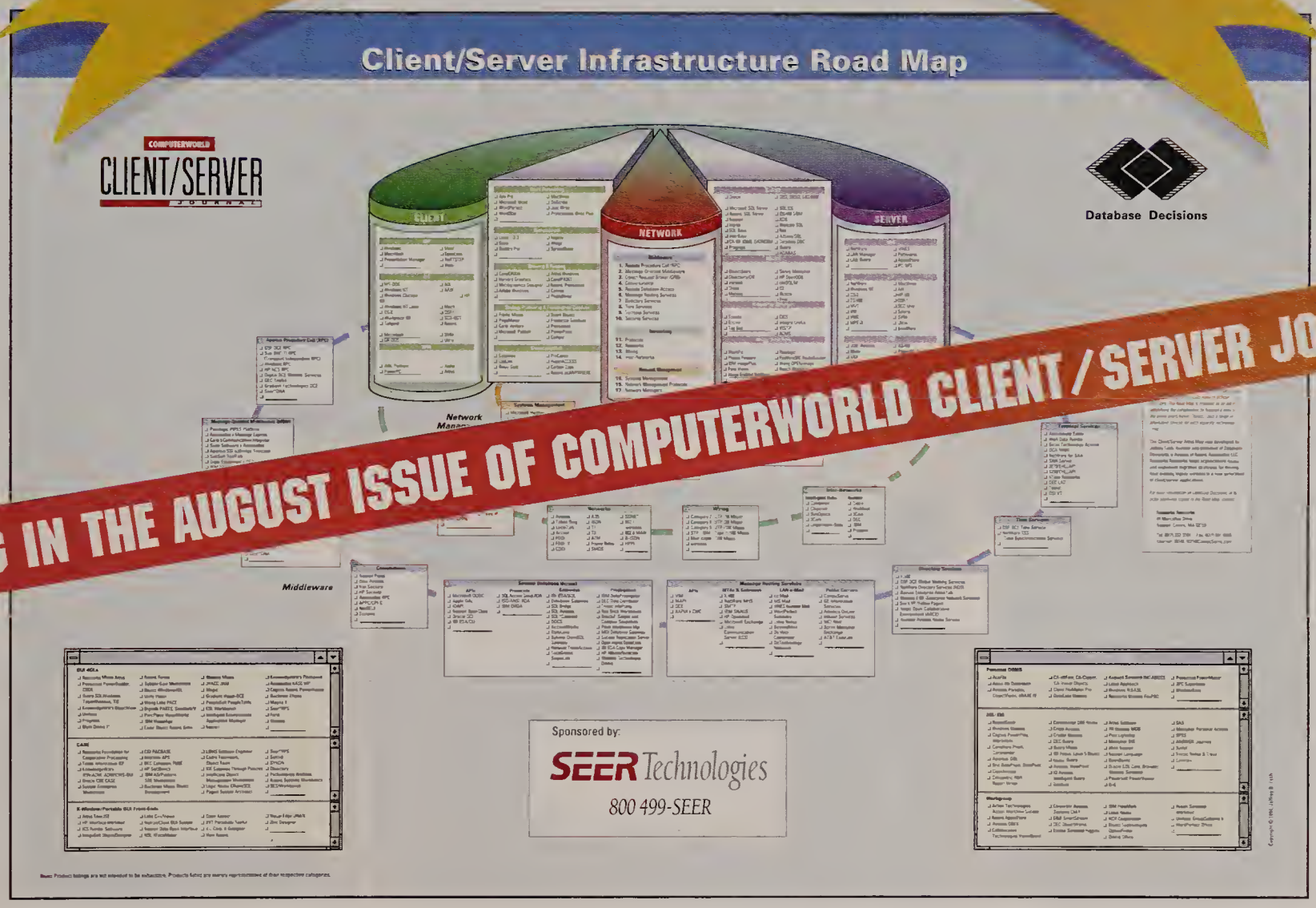

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This special poster details the various hardware, software and networking platforms and products involved in a client/server infrastructure. The Road Map can be your quick reference resource as you navigate through the client/server decision process. Be sure to look for it in the August issue of Computerworld Client/Server Journal, the quarterly magazine for those leading the move to client/server computing.

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intel inside

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Editorial

Buyer's market

This time of the year, when the livin' is supposed to be easy, two giants in the computer industry are sweating through the most pivotal points in their histories.

For the customers of IBM and Digital, there is no time like the present. Thousands of sites worldwide have huge investments in Digital and IBM technology and services, and they are intricately wed — for better or worse — to the fate of these companies.

The companies' importance to the industry as a whole cannot be overstated either. IBM and Digital sales together represent one of every five dollars spent on information technology globally. That's not a large combined share, but the involvement of IBM and Digital systems in mission-critical corporate applications today is staggering.

Some might argue that lumping IBM together with Digital these days is unfair in that the latter seems caught in a downward spiral — its most recent reorganization notwithstanding (see story in news) — while IBM has righted itself. But there are signs that IBM's "recovery" may be tenuous, including its up-and-down performance in the PC market.

Longer-term, IBM's ace in the hole may be its ability to provide the only scalable desktop-to-mainframe client/server architecture. And IBM can comprehend the corporate computing environment as well as or better than any other provider, a lesson Microsoft would be wise to learn as it seeks to be a corporate partner.

Digital is in a more unstable position. What strikes me about the elements of last week's reorganization is the vagueness of how this new structure will help the company. Digital executives have bet the company on Alpha chip technology. Does that mean Digital will plow ahead with Alpha irrespective of what the market decides? Is there room in Digital's plan for an aggressive Pentium or PowerPC-based server strategy, for example? After all, it's not like Alpha has set the non-Digital world afire, despite its strengths.

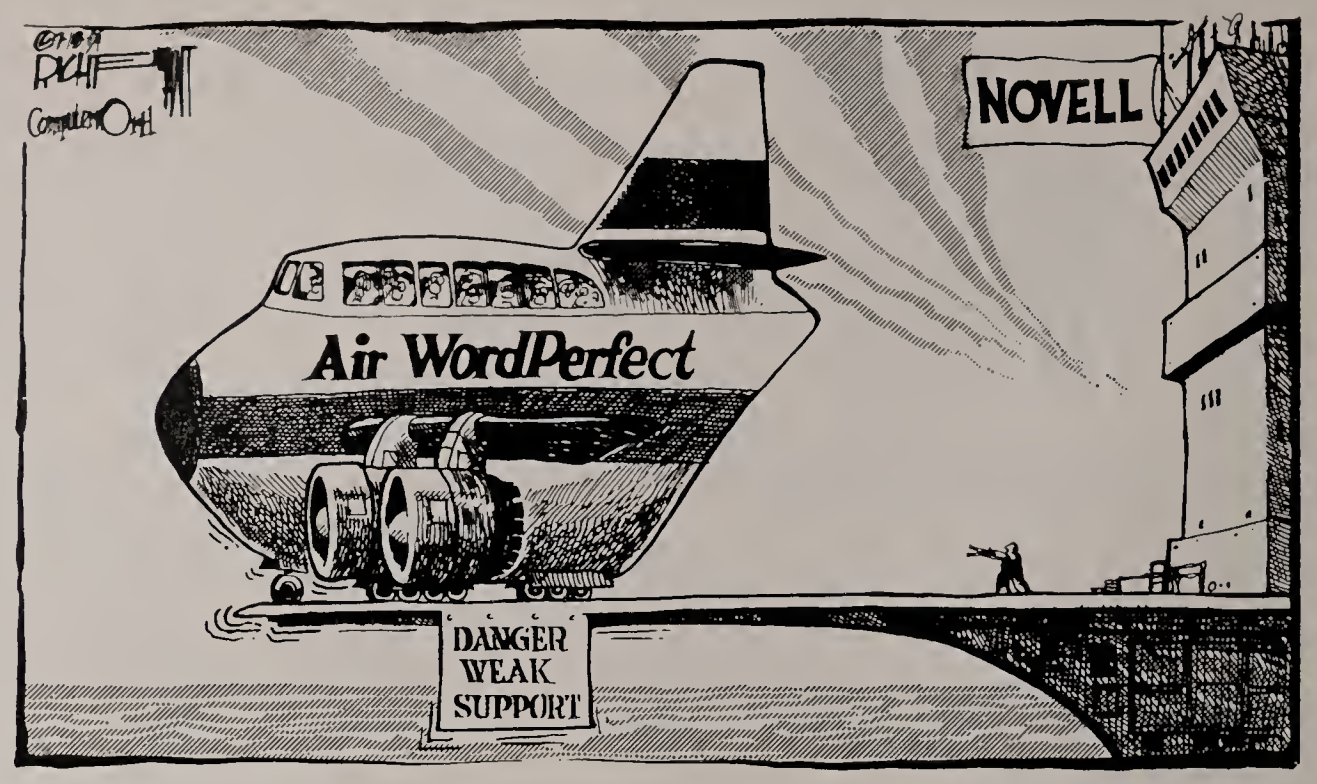
Digital and IBM will post their quarterly financial results this week. Digital will lose another enormous pile of money as it enters year three of its two-year restructuring. IBM will likely continue to show incremental improvements in its business health, but it cannot be pronounced "recovered."

For customers, there is one certainty. The success or failure of both companies is directly proportional to their ability to hang on to big corporate accounts.

In today's world of long-term planning and short-term actions, the scramble to revive elements of what used to be called account control can produce some very interesting opportunities for customers. As one European IS manager said to me recently, "The big guys are acting like start-ups. They want the business more than I've ever seen. I like things this way."

Bill Laberis

Bill Laberis, *Editor in Chief*



Letters to the editor

Privacy supersedes E-mail 'ownership'

An electronic-mail network, including messages and their contents, does not "belong to an employer," as Bonnie Brown asserts ["Is E-mail private or public?" CW, June 27], any more than does a private branch exchange and its phone conversations.

Brown's desire to "protect" the company's interests doesn't give her permission to invade privacy. I'm sure that if she lives in an apartment she wouldn't want to find that her landlord was listening in because he "owned" the wires in the building.

Tab Julius
Ashland, N.H.

Bonnie Brown tries to extrapolate that because the equipment on which electronic-mail is generated is corporate property, the corporation has a right to protect that property.

But the corporation doesn't own the employees, it hires them — presumably to be effective workers. They should be considered innocent of fraudulent E-mail use unless there is some reason for suspicion. As Corey L. Nelson points out, the company owns the telephone system, but it cannot wiretap.

I hope that appropriate legislation equating E-mail systems with telephone and postal systems will be passed and that in the meantime employers will institute policies that recognize the cultural expectations of their work force.

Jessica Bailey
Fremont, Calif.

Know your stuff

Was I the only one who found "Model predicts client/server success" [CW, June 27] hysterically funny?

The single biggest challenge facing customers attempting client/server conversion is technical competence. With turnkey systems, the vendor was expected to be more knowledgeable than the customer. But with client/server, the customer must be at least as knowledgeable as the vendor. If you need a vendor to predict your success with client/server, you probably need education more than you need a modeling tool.

Matthew Conescu
Atlanta

Digital: Rdb is tops

We at Digital take strong objection to "Rdb falling by Digital wayside" [CW, May 30] and are disappointed that we were not given an opportunity to tell our side of the story.

Digital is committed to DEC Rdb and to the continued support of its hundreds of thousands of users. The product remains extremely competitive in the database marketplace and will continue to be enhanced to support our customers' critical needs. DEC Rdb currently runs on OpenVMS and will be released on OSF/1 and Microsoft Corp.'s Windows NT later this year.

DEC Rdb is clearly the top relational database performer in the market today. There are more than 250 applications on Rdb. The vast majority are in the process of porting applications to Alpha AXP.

Mike O'Connell
DEC Rdb marketing manager
Digital Equipment Corp.
Maynard, Mass.

Humorist delivers view from trenches

It was interesting to find a portion of the first book by Michael Cohn ["A warped and wacky view of computer history," CW, June 13]. It's one thing to read articles written by writers and another to read something from a soldier in the field.

I have followed Cohn's career in *Computerworld* during the past several years — from an unemployed consultant to an employee of a large computer firm and then finally an employee of a small company.

Bravo, Michael — it's the *real* world.

Alex M. Kelso
Nashville

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Is it going to be groupware or E-mail?

Yosi Amram

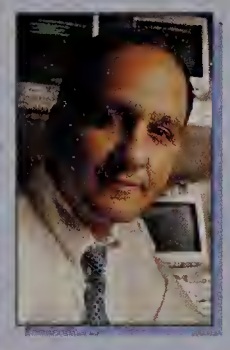
Get ready for the next clash of the software titans. By late summer or early fall, a major marketing war among the Big 3 software concerns — Lotus, Microsoft and Novell/WordPerfect — is likely to explode. Unlike previous battles over whose spreadsheet or word processing technology is better, this one will zero in on the fast-growing groupware and electronic-mail markets.

MIS managers should brace themselves now for a barrage of contradictory marketing messages. Be sure to evaluate your organization's requirements before choosing which approach is the correct one for you. Some companies, such as Lotus, will tout the benefits of an integrated database approach and a groupware standard that runs across several platforms. Others, such as Microsoft, will advocate a strong E-mail foundation above all else.

As chief executive officer at a technology company, I am familiar with the trade-offs and limitations of both E-mail and groupware. The nature of our business requires a high-end Intel I486-based workstation on every desk.

Notes is widely used throughout the company, primarily as a vehicle for viewing and responding to daily news stories, as well as a way to communicate with customers and suppliers. But E-mail gets even more use. That's because many messages are directed to everyone in the company. With standard E-mail, I can scan through headlines, read messages at will and keep my finger on the pulse of the company. When traveling, I can also dial into one location and quickly retrieve the messages I need.

E-mail's most telling limitation is that it leads to wasted time when messaging gets out of control. The more sophisticated groupware approach is to create several discussion databases. This way each employee can check into the appropriate databases, as needed, without opening unnecessary messages.



Managers are faced with choosing between database- and mail-oriented offerings.

Equally important, groupware creates an archival record of company knowledge that won't disappear, even when employees leave the organization. Groupware can also more easily accept new media formats such as graphics and sound, which will become increasingly important in the future.

But I can't depend on groupware alone to monitor my entire company. I don't have the time to regularly frequent a dozen discussion databases. Nor can I easily replicate many databases when running Notes from a hotel room. My company is committed to groupware, but we still find ourselves using standard E-mail for general announcements and for communicating with the outside world.

If your company is like mine and can't get along without E-mail — but may be intimidated by the added cost and complexity of groupware — then there are some interesting hybrids to consider. These products take standard E-mail and extend it with groupware-like features. One example is Share from Collabra Software, Inc.

These hybrids won't generate the same thunder as we'll be hearing from Notes and Microsoft's EMS/Touchdown, nor will they offer the same feature set. On the other hand, for companies that want the benefits of discussion databases on top of standard E-mail, they may be a good choice.

Amram is founder and chief executive officer of Individual, Inc., a Cambridge, Mass., provider of First and HeadsUp customized electronic news services.

The trouble with cyberspace

Esther Dyson

The moment I reached the legal age of 14, I took the job I had long dreamed of — working as a page at the local public library. There I helped people find and select books, checked the books out and returned them to their proper places.

In those days, information was physical: It occupied space on the shelves — religion over here, dinosaurs over there, children's fiction upstairs. Depending on the season or fashion, some sections expanded while others contracted.

The trouble with cyberspace is that we can no longer rely on distance and convenience to foster "correct" behavior.

In this old world, bad "information behavior" was difficult and physically discouraged. Plagiarism required rewriting long passages. Copying was inconvenient. A teacher might make mimeographed copies of a short story, but students (or school districts) bought their own paperbacks of novels. Children were shooed out of the adult sections, particularly those on human biology. What child would dare to borrow a copy of *Lady Chatterley's Lover*? And our library simply didn't carry a lot of books of questionable taste. It didn't even have Nancy Drew, which was considered low quality. But if you really wanted something questionable, you could go out of town and buy it for cash; no one would know.

That was a physical world, then. Today, we have cyberspace. The trouble with cyberspace is that we can no longer rely on distance and convenience to foster "correct" behavior, however we might define it. There are few barriers of distance or convenience to maintain privacy. You can't just move to another town to escape a shady past.

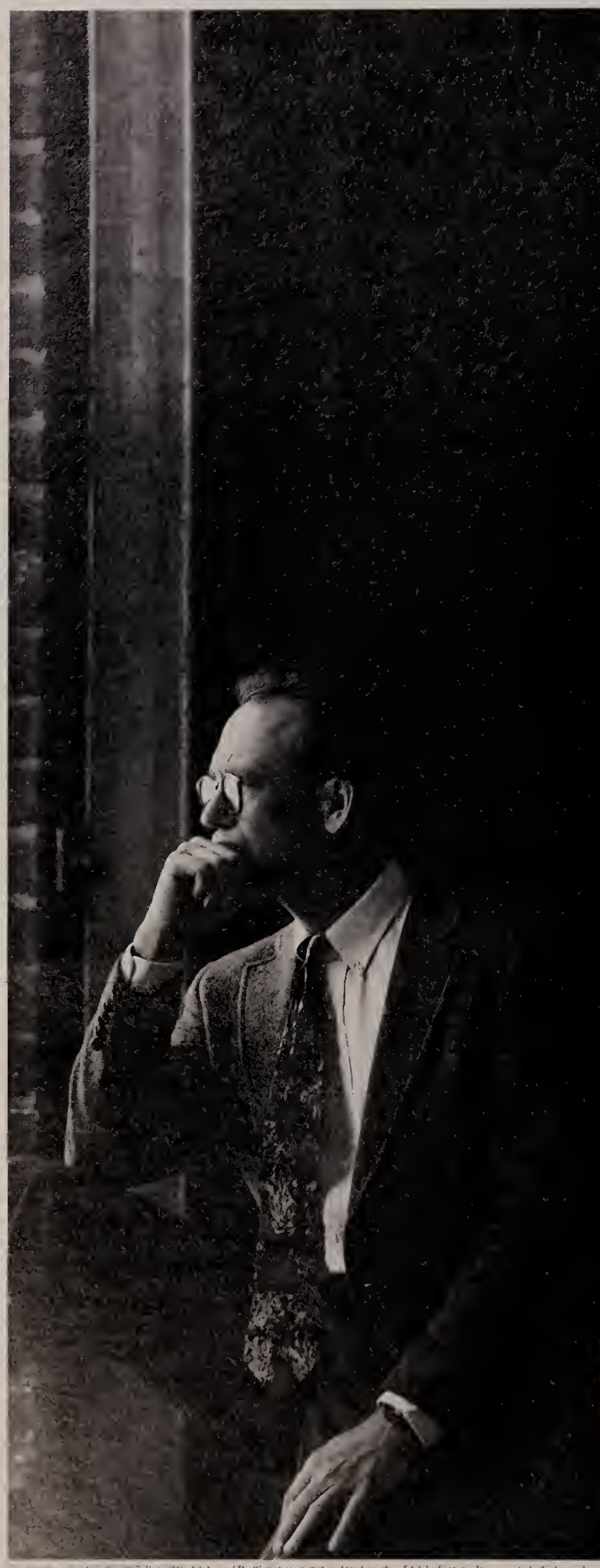
Cyberspace allows for little compromise. In the physical world, many issues did not need to be decided. But in cyberspace, you can't rely on practicality or common sense. The issues facing the networked world are matters of principle instead of practice: the role of advertising, the extent of privacy, the abuse of anonymity, censorship, protection of intellectual property.

Cyberspace, because it (almost) erases the strictures of cost and distance, forces us to grapple with what is right rather than what is practical. Reveal someone's past — or the details of his purchases last month — and it could be all over the 'net. Tell a sexist joke, and it may get wider circulation than it ever did on paper — without compensation to the author.

What is the solution? How can we recreate some of those spurs to compromise in cyberspace? We have become a society of absolutes: What is allowed is bound to happen, and if it happens in cyberspace it quickly becomes pervasive. Meanwhile, knowledge of this is a real deterrent to its development. Many people have stopped sharing information electronically for fear of its too broad dissemination. People are reluctant to buy things for fear of getting too much advertising, and they're afraid to reveal information because of how far it may travel.

The answer, unfortunately, is likely to be specific regulations. Broad prohibitions would be too dampening; anything other than specific regulations would be ineffective. People are likely to encrypt their information and control it tightly. Users will find the cyberspace equivalent of "planned communities" with their own laws and take up residence with people of like minds. The frontier is getting so crowded that no one goes there anymore.

Dyson is president of Edventure Holdings, Inc. in New York. She welcomes readers' thoughts and can be reached on the Internet at edyson@eff.org.



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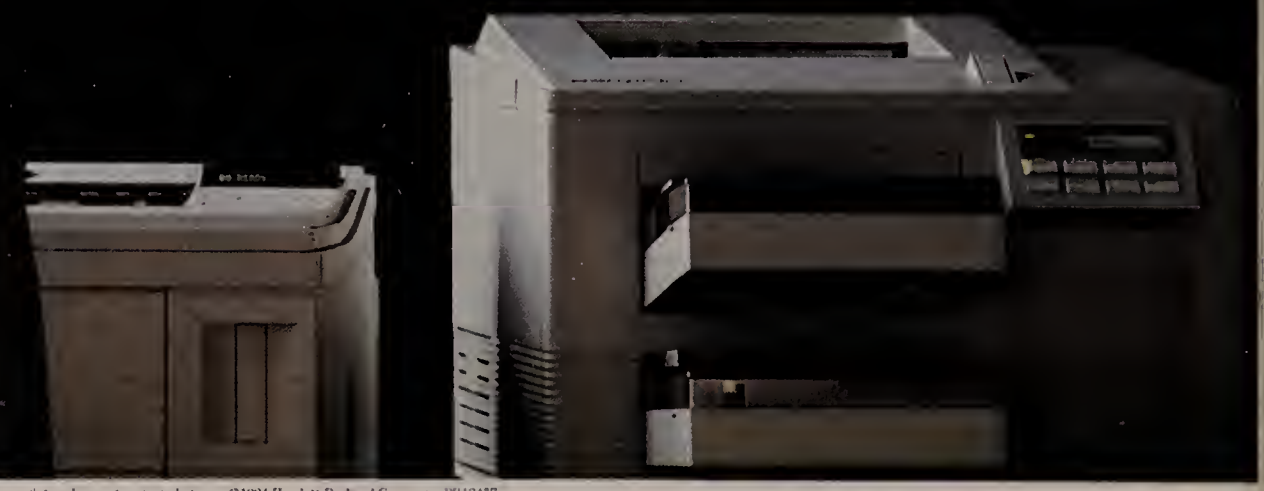

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Users question notebook upgrades

By Michael Fitzgerald

The "Lego" notebook is upon us, as vendors build modularity and upgradability into even entry-level products.

But Lego-like systems, which let users upgrade various components or add modules with different features — such as the TV Tuner or cellular modem that can be added to some of IBM PC Co.'s ThinkPad models — tend to be something users accept but care little about.

"Do you really buy a computer for upgradability?" asked Ron Edwards, corporate director of business computing at Nike, Inc. in Beaverton, Ore. For instance, Edwards said that while removable hard drives and replaceable RAM cards were important and useful features, he could see no reason why a user would want to upgrade a screen, even from monochrome to color.

Easier for manufacturer

Analysts such as Bruce Stephen, director of PC hardware and pricing research at International Data Corp. in Framingham, Mass., agreed that "the benefit with regard to these Lego systems is that it makes the manufacturer's job a lot easier. From a user perspective, hard drives are probably the one thing that make sense."

Stephen added that removing a floppy drive module and replacing it with a second battery was another feature that could appeal to users.

There are obvious manufacturing benefits to modularity. In the desktop world, notebook makers can get design efficiencies from generation to generation by following a modular development path. Upgrades of various components within a family also come to market quicker and with less up-front design.

Despite the obvious vendor benefits, Bob Moore, a product marketing manager at Zenith Data Systems, said, "we think modularity extends the life of notebooks for users."

Users, however, point out that notebook technology typically changes so rapidly that it makes little sense to upgrade, much as with desktops. In addition, notebooks tend to deteriorate faster than PCs. For instance, documents obtained from Grid Systems Corp. before its demise showed that the company's sales pitch revolved around showing customers that maintaining notebooks past three years of life was more expensive than buying new ones.

Vendors acknowledge that modularity is not the most important selling point.

"If the purpose of modularity is upgradability, well, by the time somebody needs to upgrade a component, they probably need to upgrade more than just one component" and will probably buy a new system, said a spokesman at Compaq Computer Corp.

Still, the spokesman and users cited upgradability and modularity as checklist items, particularly for hard drives.

Users contacted said they like having upgradable hard drives. Otherwise, information systems managers see modularity as basically a marketing tool for vendors.

"Users don't upgrade. The point of modularity is it sounds good when you're discussing the capability of the notebook," said Victor Mutnick, corporate vice president at New York Life Insurance Co. Mutnick said the notebook "price/performance curve has to level off more" before he will look seriously at upgrading units. "Why invest in a new one when the upgrade costs almost as much as a new notebook?"

Wanted by users

But some vendors think users will want to upgrade their notebooks down the line and certainly want to use the same size hard drive from one generation to the next.

"People do want to upgrade — that's why we're trying to hold our platform stable," said James Bartlett, worldwide marketing executive for the PC Co.'s ThinkPad line. IBM, after some early changes in ThinkPad's casing design, has settled on one basic design.

Bartlett said the basic weight and size of notebooks have stabilized in the past few years, allowing vendors to start innovating in ways such as modularity and, to some degree, upgradability. Bartlett cited this stability as one reason why companies such as the PC Co. can offer a three-year warranty on notebooks.

Users like the three-year warranty, and several said they buy notebooks only from companies that offer this warranty, as opposed to those that have stayed with a 90-day warranty. But they do not think the market has stabilized enough to concentrate on upgrades.

"I don't see that the price/performance curve levels off in '94 or even '95," Mutnick said. "Once they come out with Pentium in a notebook, it's a quantum leap again."

Playing catch-up

Notebooks have clearly followed their desktop brethren down the path of upgradability and gone a step further by making components modular. The push is coming down to entry-level notebooks, too. The PC Co. put its ThinkPad 300 in the same modular casing as the ThinkPad 750 family, and Zenith Data, for instance, will soon ship the Z-Star EX, an entry-level notebook with a level of modularity not usually found in entry-level notebooks.

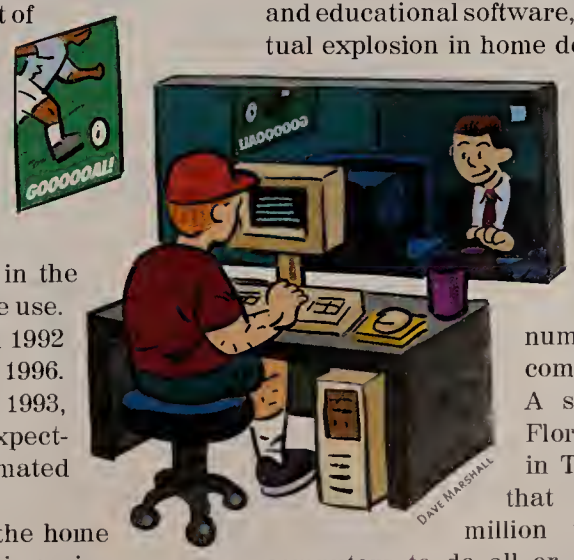
The Z-Star EX features upgradable RAM and CPU and removable hard and floppy drives to allow an extra battery to be installed. It also has an upgradable screen, allowing for changes from monochrome to passive-matrix color, active-matrix color or pen-capable screens.

One unique component is an AC Adapter module that can be used as an internal component, rather than the external, brick-like attachment in systems today.

Pentium fuels home market growth

By Jaikumar Vijayan

As Intel Corp. intensifies efforts to migrate users to the Pentium processor, there are indications that the home segment of the market could, for the first time, be leading and even influencing this transition.



A recent study by Channel Marketing Corp. in Dallas revealed that in 1993, 30% of all PCs purchased in the U.S. were acquired for home use. This compares with 27% in 1992 and a projected 42% by 1996. From 6 million units sold in 1993, PCs sold for home use are expected to mushroom to an estimated 19 million by 1996.

Driving this demand in the home segment is a rapidly shrinking price curve — most recently caused by Intel's Pentium push — that has driven high-performance I486-based PCs to the $1,200 to $1,800 range and Pentium systems to less than $2,000. This, combined with a growing availability of multimedia applications, including game, entertainment and educational software, has resulted in a virtual explosion in home demand, according to David Goldstein, president of Channel Marketing.

Also contributing in a major way to home market growth has been the increasing number of workers using computers from home. A study conducted by Florida State University in Tallahassee revealed that an estimated 7.6 million telecommuters use computers to do all or some of their work from home.

Home market, *page 42*

Database market

Computer Concepts revives Superbase

By William Brandel

■ Superbase, the champion-turned-cellar dweller in the Windows-based relational PC database market standings, is getting another chance at bat. However, the Windows-based PC database league has become viciously competitive in the past few years, and it remains unclear whether a revived franchise can make it.

The Superbase product line is being revived by Computer Concepts Corp. (CCC) in Bohemia, N.Y., which bought the product line from Software Publishing Corp. earlier this year. Prior to the Superbase purchase, CCC was best known for its D.B. Express analysis and reporting product. Now CCC is preparing to beef up its recent acquisition for a series of product launches later this year.

First, CCC is planning an interim release of Superbase this summer, which will include new imaging data compression formats and a new SQL library. It will also integrate D.B. Express with the database.

Later this year, the company plans to release what it calls SuperSuites — a suite of tools bundled with Superbase. Unlike other application suites on the market,

Superbase, *page 40*

Apple ups memory requirement

System 7.5 may need 16M bytes; Users say it is worth the price

By Mark Halper

Apple Computer, Inc.'s System 7.5 operating system is drawing rave reviews for graphics and other features. However, users who wish to exploit some of its advanced capabilities will pay a price: 16M bytes of memory.

Apple is recommending that users deploy no less than that amount of RAM on a Power Macintosh if they use the highly regarded QuickDraw GX graphics feature and the PowerTalk communications included in System 7.5, which the company introduced last week after a PC Expo sneak preview.

QuickDraw GX is an enhanced version of Apple's QuickDraw drawing and printing program. Users praise it as a major step forward in graphics capabilities [CW, June 27]. Among its improvements over QuickDraw is the way it permits real-time, on-screen color mixing and real-time, letter-by-letter adjustment of ligatures and font types. PowerTalk enables users to receive electronic mail, bulletin board messages, faxes, voice mail and other communications through a single delivery system.

With memory selling at about $300 for 4M bytes, Apple's suggested 16M-byte minimum for these features represents a $600 premium over the basic price of a Power Macintosh, which comes equipped with 8M bytes of RAM.

Users who are accustomed to running 4M to 8M bytes of RAM on 680x0-based Macintoshes with the earlier 7.1 operating system begrudgingly acknowledged that as Apple locks horns with Microsoft Corp. in a battle to enrich operating systems, memory minimums are bound to keep growing on both sides.

"If they're saying that 16 is the minimum you should have with this, I think we're getting to the point where it might be getting a little excessive," said Nick Kontis, unit manager at Southern California Edison Co. in Rosemead, Calif. "But now that System 7.5 is coming and Microsoft's new products are taking considerably more memory, it seems like we're going to end up with no less than 16M bytes of memory on our basic workstations."

Brian Comnes, manager at the information center of DHL Airways, Inc. in Redwood City, Calif., echoed those observations.

"Things are going to take more memory over time. It's an inhibitor, but we're routinely buying 8M and 12M bytes for Windows anyway. Is this a harbinger of the 16M-byte machine? I don't know," Comnes said. "It gets kind of dicey, but if QuickDraw GX is what you need to get super-duper graphics performance and your job is to create high-end graphics, people will pay what they need to in order to get the job done."

Better color, quality

And users clearly were impressed with QuickDraw GX.

Although he does not plan to widely install 7.5 until he can thoroughly test it, Phillip Corehary, network systems analyst at Denver-based US West Marketing Resource Group, Inc., said the enhanced graphics program should bring vast improvement in his printing speeds and quality.

"It will provide the ability to guarantee that the color you get when you print is the same as on your screen, and that's something that's been a black art at best on any computer," he said.

Comnes observed that QuickDraw GX should help minimize graphics bottlenecks that Macintosh users experience.

"Getting that bundled into the operating system is a big move," he said.

Graphically better

System 7.5 graphic and printing enhancements include the following:

- Consistent colors among printers, screen and scanners.
- Real-time color mixing.
- Variable styles in a font.
- Printers chosen on the fly.
- More printing customization.

American Greetings puts cards on PCs

By Julia King

Riding high on the success of its computerized greeting card kiosks, American Greetings Corp. said recently it will launch a line of electronic cards that customers can create and send using PCs in their homes.

The $1.7 billion, Cleveland-based company also named longtime information systems chief Dean Trilling to head up a new interactive marketing division responsible for developing the new product line.

Dean Trilling *will head up the interactive marketing division*

"One of Dean's key roles will be to accelerate our discussions with the leading players on the information highway and to explore new ways of delivering products to consumers," said Morry Weiss, American Greetings' chief executive officer.

Electronic sentiments

In the past 18 months, American Greetings has racked up more than $35 million from selling computerized cards at 9,000 kiosks in the U.S., Canada and the UK. Now, Weiss said, the company is looking to take the business of electronic sentiments one step further by becoming "a major content provider" to on-line service companies such as Prodigy Services Co. Several months ago, American Greetings — as well as its largest competitor, Hallmark Cards, Inc. — teamed up with Prodigy in separate tests, Weiss said.

Weiss said American Greetings has already documented an increase in both male and teenage customers — traditionally, its two smallest buyer segments — thanks largely to the high-tech element of its computerized kiosks. On-line cards should help increase those segments even more, he said.

"It is our expectation to build a $500 million business," Weiss said. "Technology can take us into design and personalization. It's possible in the future that you'll see sweatshirts, aprons and God knows what else" being designed, sold and paid for on-line.

Superbase

CONTINUED FROM PAGE 39

SuperSuites will explicitly target the Superbase audience with a variety of database programming tools.

Before year's end, the company said it will also roll out a significant upgrade of Superbase. Version 3.0 will offer compatibility with Microsoft Corp.'s Open Database Connectivity and Visual Basic for Applications.

Company officials have positioned their acquisition of Superbase as an opportunity to hold down a niche of the PC database market. However, that market and niche have changed dramatically in the past three years, said Nicole Roth, an analyst at International Data Corp. (IDC), a Framingham, Mass., market research concern.

Catching up to the big players

Roth noted that with application suites offering databases at a fraction of their 1991 cost and with competitive upgrades offering relational Windows databases for less than $100, Superbase will have a difficult time getting its niche message heard in the mass-marketing din.

"Software Publishing got out of the PC database market because they couldn't keep up with the big players and their suites," Roth said. "Computer Concepts is a better-put-together company than Software Publishing, but I don't know how they will fare any better."

According to IDC, Superbase pulled in 3.9%, or $12 million, of the database market revenue last year. This represents only a $2 million upgrade from 1991, when Superbase pulled in 77% of the market revenue. This, at a time when the Windows-based relational PC database market experienced explosive growth.

However, the fact that Superbase has a mature Windows product and targets programmers, not end users, enables the product to keep its customer base. For example, Joseph Garvey, a developer at Walsh-Lowe & Associates, a development firm in Hoboken, N.J., moved to Superbase four years ago when the Windows version of the product first came out. Previously, he had worked with Oracle Corp.'s Oracle, Microrim, Inc.'s RBase and Borland International, Inc.'s dBase.

Garvey said he has used Superbase as the engine for facilities management applications that are in use at NBC, Bank of Tokyo and Cellular One.

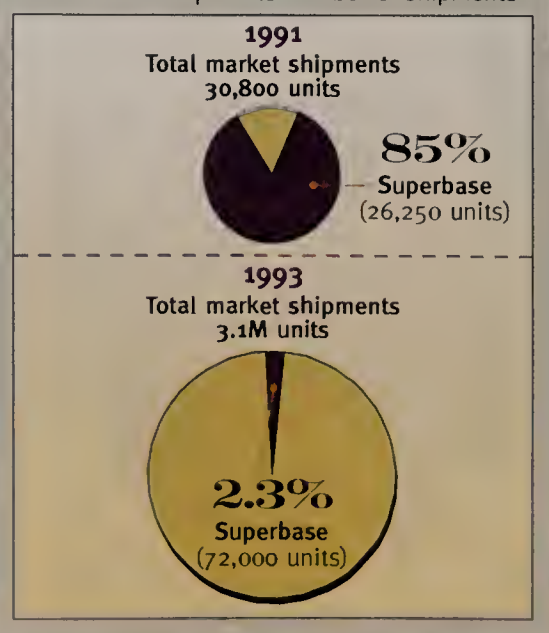
Good for programmers

Programmers including Garvey said they are encouraged that a company such as CCC, which has its roots in the database programming market, now owns the Superbase product line. Superbase's former owner, Software Publishing, is now focused on graphics-based applications.

"The product is excellent for programmers," Garvey said. "But you won't see too many end users moving toward it."

Windows PC database market

While the Windows PC database market grew a hundredfold, Superbase lost its hold on the market as it tripled its number of shipments



Source: International Data Corp., Framingham, Mass.

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Instant gratification from Panacea's Instant Upgrade

By Ed Scannell

A technology created by a small software company lets users upgrade the company's software products at their desks, with one phone call and a credit card.

Panacea, Inc.'s Instant Upgrade technology is intended to eliminate users' need to buy software at retail stores or wait days or weeks for software to arrive by mail.

The service targets what company officials perceive as a growing number of users who want "instant gratification" when it comes to getting new software, according to Panacea President Jake Richter.

"We find more and more users don't want to wait for products to reach their doors," he said.

Upgrade made easy

Richter said users begin the purchase process by making a toll-free call to Panacea and giving a representative their credit card number.

Then the Londonderry, N.H., company downloads the upgrade software and explains to users how the software generates a specific code for their machines. Users read back that code, and Panacea representatives give them an "unlock code" that allows the upgrade software to fully install, according to Richter.

Users can also get accompanying documentation for the upgrade.

About a year ago, IBM and major software distributors such as Merisel, Inc. announced distribution programs similar to Instant Upgrade. Those programs, however, required users to select programs from a CD-ROM before the vendor or distributor gave users the code to unlock the programs they wanted to buy.

While these programs attract some users, most still prefer buying software in retail stores or by mail, indicating that it could be a slow trek toward broad-based acceptance of technologies such as Instant Upgrade.

Getting a good price

"It's a nice idea, but a lot of shops like ours have resellers down the street that act like in-house distributors for us and give us a pretty good price on stuff," said John Handy, an information systems professional at a large chemical company in Gaithersburg, Md.

But because Panacea's method of distribution does not involve putting products on CD-ROMs, its distribution costs are lower, Richter contends.

"We allow users to take stuff right off bulletin boards so our costs don't involve CD-ROMs," said Richter, claiming that his upgrades can cost up to 50% less than their packaged counterparts.

The first Panacea software to offer Instant Upgrade is the recently introduced Turbo DLDDemo, which offers free AutoCad display acceleration along with a 40-minute per day sample of Panacea's TurboDLD Deluxe productivity pack for AutoCad.

If the new technology proves successful, Richter said he will seriously weigh the prospect of making it available to other software makers such as Lotus Development Corp. or Microsoft Corp.

Home market

CONTINUED FROM PAGE 39

The alacrity with which home users have been responding to Intel's newest and fastest processor family could soon result in Pentium sales to the home segment outstripping those to the corporate world, according to analysts and systems manufacturers.

Although sales figures are not available yet, some observers said they believe the home market could already represent a greater proportion of Pentium sales than the office. For example, one estimate from Channel Marketing predicts the home market will represent 80% of Pentium unit sales this year — though even Intel discounted that possibility.

At the same time, Intel acknowledges that demand from the home segment has been substantially greater than it anticipated, particularly at what is still considered a very nascent stage of the Pentium's move into the commercial desktop market.

More than expected

"There has been a much higher percentage of Pentium systems being shifted into homes than we had expected," said Mark Olson, marketing manager at Intel Architecture Labs in Santa Clara, Calif. Unlike previous processor generations that typically migrated into homes only after becoming established on corporate servers and PCs, Pentium seems destined to reverse that process, at least for now, he said.

As home users begin to snap up I486- and Pentium-based systems in increasing numbers, the market could also begin to affect the business user segment, observers predicted.

For instance, Auburn University in Alabama has been making greater investments in modem and other communications technologies as more users seek access to university computers from home. According to Bliss Bailey, a university network services specialist, there has been a near tripling in demand for home access in the past couple of years.

"There's a lot of things being driven by the home market today, particularly multimedia as well as plug and play," said John Rose, a senior vice president at Compaq Computer Corp.

According to Rose, burgeoning multimedia applications for the home market and the need for greater plug-and-play features are causing vendors to integrate sophisticated features such as CD-ROM drives, full-motion video and high-quality audio on home machines.

On the threshold

"Application development targeted at the office may have fallen into a rut," Olson said. He added that home users have been faster to adapt to newer and better interface paradigms than corporate users because of a mushrooming availability of game, educational and entertainment software that makes the confrontation level between the computer and user as low as possible.

Aiming for home

In the next two weeks, Packard Bell, a market leader in the home segment, will put on retail shelves around the country a whole new range of 486 and Pentium PCs aimed specifically at the home market. The systems come packed full of features that analysts said are typical of what the home user is looking for. Packard Bell's "designer PCs" feature integrated speakers, color-coded connectors and pop-on, pop-off color accent panels that let customers match the PCs to their home decor. The systems also come with 27 bundled software titles, including 11 CD-ROMs. Some models feature television, FM-radio, stereo, fax and telephone answering system capabilities.

According to a recent survey of 10,600 households by market research firm Computer Intelligence/InfoCorp in Santa Clara, Calif., 37.5% of all U.S. homes have someone who uses a PC either in the workplace or at home. Significantly, the percentage of PCs purchased by corporations and governments is expected to decline to about 22% by 1996, although overall unit purchases will increase, according to Channel Marketing.

"When a technology penetrates 33% of a market, it is generally accepted as a threshold, at which point it begins to impact other technologies. There are indications that the home market may have reached that threshold," said Ed Forrest, director of the communication research center at Florida State University.

New Products

Evergreen Technologies, Inc. has announced the Rev to 486 processor upgrades.

According to the Corvallis, Ore., company, the upgrade retrofits an Intel Corp. I386DX- or I386SX-based computer with an optimized 486 microprocessor.

The product uses IBM's Blue Lightning processors, which enable users to triple clock speed up to 100 MHz and add 16K bytes of internal cache.

Pricing starts at $449.

▶ *Evergreen Technologies*
(503) 757-0934

Aspen Computer, Inc. has introduced the Aspen Select Series of notebooks.

According to the Buffalo, N.Y., company, the notebooks include an increased battery life option, a large 25mm center trackball, built-in sound for voice and music and expanded video RAM.

The Aspen Select Series provides a built-in multimedia display, two PCMCIA slots and an Intel Corp. 33-MHz I486DX, 66-MHz I486DX2 or 100-MHz DX4 CPU.

Prices start at $1,925.

▶ *Aspen Computer*
(716) 626-0315

Greystone Peripherals, Inc. has announced the DB-116 DataBlaster, a software duplication system.

According to the Los Gatos, Calif., company, the system was designed to load data and programs onto hard drives and flash drives that use the ATA/PCMCIA interface.

The DB-116 DataBlaster loads software in parallel onto 16 targets in two banks of eight, so the user can unload one bank while the other is engaged in the copy process.

Other features include bank swapping for loading and unloading, easy operator switches, an LCD display and an automatic power-saver mode.

The DB-116 DataBlaster costs $4,495.

▶ *Greystone Peripherals*
(408) 866-4739

SPSS, Inc. has introduced SPSS 6.1 for Windows, statistical software.

According to the Chicago firm, the product features Microsoft Corp.'s Win32 technology, which lets 16-bit Windows operating environments run 32-bit programs. This allows the software to run more than three times faster than previous versions.

SPSS 6.1 for Windows has added a tool bar, expanded Help, new graphics file formats and more statistical features including case identification of individual points in scatter plots, display of censored cases in Kaplan-Meier plots, one-sample t-tests and a loglinear procedure for modeling.

SPSS 6.1 for Windows has no data set limitation, includes data management capabilities and automatically creates graphs as part of the data analysis.

SPSS 6.1 for Windows costs $695.

▶ *SPSS*
(312) 329-2400

Product short

FWB, Inc. has announced the SledgeHammer 3500 II and SledgeHammer 3500 Wide two-headed parallel hard disks. The drives read data by two sets of disk drive actuators and heads operating in tandem, allowing simultaneous data transfer and higher data transfer rates. Cost: $9,399 for SledgeHammer 3500 II and $8,699 for SledgeHammer 3500 Wide. FWB, San Francisco (415) 474-8055.

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Users take alternate routes on naming

Await improvements from X/Open spec

By Jean S. Bozman

Users at large companies are creating their own naming schemes for distributed computing networks as they await a common naming standard not expected to appear until mid-1995. In the standard's absence, users said they have written work-arounds that take the form of software scripts and lists of alias directory names.

A unified naming system for all data files and user addresses would allow any client machine to reach any server on an enterprise network. To that end, X/Open Co. has adopted a preliminary specification called the X/Open Federated Naming (XFN) service to serve as a model for vendors' global naming systems [CW, July 11].

Not connecting

XFN support will be rolled into the Open Software Foundation's (OSF) Distributed Computing Environment (DCE) Version 1.2 before it ships in late 1995, said David Lounsbury, director of core services at the OSF. However, until a general directory of names is available, client requests from OSF's DCE systems will not be able to connect with distributed data servers based on Sun Microsystems, Inc.'s ONC/NIS+, for example.

At the same time, users must contend with different protocols and directories used in various computer systems, including those from Novell, Inc., Microsoft Corp. and mainframe vendors. That requires end users to make multiple log-ons and prevents an easy interchange of data files.

"The basic problem is that nobody does it the same [way], and when you have a mixture of vendors, it's kind of convoluted," said Dennis Walsh, chief information officer at Entergy Corp., a $6.2 billion utility firm in New Orleans that has multiple Unix systems, IBM mainframes and about 10,000 Windows PCs. "It's just a lot of grunt work to make sure that everything lines up together."

Hyatt's Gordon Kerr: *Firm is writing specific scripts or references in each system*

But by using relational databases and software scripts, users can often hide the task of navigation in distributed client/server systems behind a user-friendly screen, said Jim Brennan, a senior director at WorkGroup Technologies, Inc. in Hampton, N.H. "In a good MIS shop, they've written a bunch of macros behind it," Brennan said. "If the server is down, they would automatically take you [to a server] somewhere else."

Users have also resorted to "alias directories" to lash distributed servers together. Two sets of naming systems can be linked through translation scripts that map one set of file names to another.

"For the moment, the way we're getting around [the naming problem] is to write very specific scripts or references in each system," said Gordon Kerr, senior vice president of MIS at Hyatt Hotels and Resorts in Chicago. "It's an elegant form of hand-coding, but it doesn't provide the general solution I need long term."

Kerr would rather launch object-oriented "agents" to navigate the global network and forget about recoding procedural applications to work with XFN.

"I would rather have the agent do the work," Kerr said. "If the objective is to dispatch an agent to go find something, then it has to know how to read and interpret various file structures and directories." But for now, Hyatt uses custom scripts to fetch data files from dissimilar computer systems, he said.

Entergy's Dennis Walsh: *'The basic problem is that nobody does it the same'*

Test drive

Leading-edge users have already tried out the OSF's DCE, which has two naming systems — a global naming system based on X.500 and the Cell Directory System. Now, X/Open's challenge will be to unify the DCE naming systems with others, such as Sun's ONC/NIS+ and the Internet's Domain Naming Service.

Wells Fargo Bank NA in San Francisco is awaiting the shipment of OSF's DCE 1.1 early next year before it goes into production with DCE cells throughout the large California bank. By adopting DCE's naming system enterprise-wide, Wells may sidestep the naming problem, except when dealing with outside suppliers, said Tsvi Gal, vice president of information technology.

Scott Winkler, research director at Gartner Group, Inc. in Stamford, Conn., said he believes most users have two choices to resolve the naming dilemma: to write custom "work-around" code and live with the associated administrative headaches or to buy translation packages.

Until more standards are in place, information systems managers may be stuck with some very awkward computing alternatives.

"There needs to be a directory of who's who and what's what, and then [users can] let the network find the best route to the server," Winkler said. "We've entered a world of client/server computing prior to having this infrastructure in place."

Vendors clamor to offer Notes-like conference features

By Lynda Radosevich

■ For companies that think Lotus Development Corp.'s Notes is overkill, low-cost alternatives are cropping up to compete with Notes' commonly used electronic discussion database feature.

This week, for example, Trax Softworks, Inc. in Culver City, Calif., will announce several enhancements to its TeamTalk group conferencing product, which first shipped in January. By September, TeamTalk will support Microsoft Corp.'s Messaging Application Programming Interface (MAPI) and Lotus' Vendor Independent Messaging (VIM). That support will allow members on different servers to update one another's discussion databases. Also, TeamTalk will be tightly integrated with Microsoft's Exchange client/server messaging line.

Also, Collabra Software, Inc. in Mountain View, Calif., said it will ship its group conferencing application, Share, on July 29. Announced in March [CW, March 21], Share is different mainly in that it lets electronic-mail users on host or LAN systems participate in group discussions even if they do not have the Share software, according to a company official.

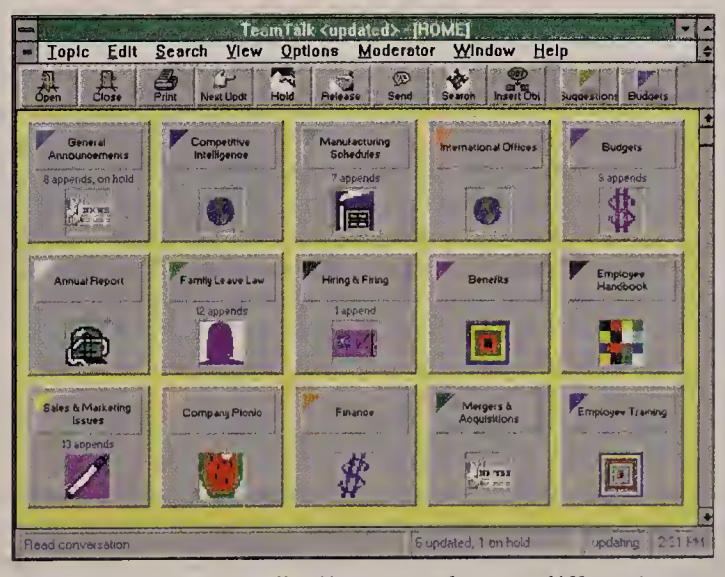
groupware

What users really want

In a Gartner Group, Inc. study completed in June, two-thirds of the 200 companies surveyed that use Notes said they do so for collaborative activities such as information discussions rather than for strategic enterprise applications.

Additionally, The Mesa Group, Inc. in Newton, Mass., recently shipped Notes and Internet connections for its Conference+ group conferencing product, which was introduced in March. Conference+ adds electronic bulletin board features to Microsoft Mail.

While the products are not as sophisticated as Notes, they cost less and provide key group discussion and conversation tracking features. For instance, TeamTalk costs $79 per user, whereas Notes costs $495 per user.



Trax Softworks' TeamTalk *allows members on different servers to update one another's discussion databases*

There's the pitch

Meanwhile, Lotus is pitching Notes as a development platform for enterprise groupware applications rather than as a stand-alone product for workgroup conferencing [CW, July 4]. However, studies indicate that most Notes users use Notes for group conferencing.

Group conferencing is just what Safeco Insurance Cos. in Seattle was looking for earlier this year, according to Paula Briten, a senior system analyst there. The company wanted a communications device for its development staff so programmers could share tips in a

Notes, *page 48*

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Motorola unit slashes IS costs

By Tim Grantham

Motorola, Inc.'s General Services Sector (GSS), which encompasses both its cellular telephony and computer manufacturing businesses, said that by dumping all its mainframes and switching to distributed Unix servers, it cut its total information technology costs to less than 1% of total sales last year.

"Damn, that's very impressive," said George Logemann, director of management strategies at Boston-based industry market researcher The Yankee Group, when told of Motorola's claims. "I generally see numbers in the 2% to 3% range for manufacturers, so anything that's below that range is remarkable.

"It's so impressive it makes me wonder if they are getting as much advantage out of [information technology] as they could."

Paul Watz, director of information technology for Motorola's computer group, responded that the GSS has used the savings to stay competitive in the cutthroat cellular telephone business, where savage price wars have slashed prices by 30% per year for the last five years. The GSS maintained an operating profit of about $700 million last year on sales of about $5.24 billion.

Speaking at the recent Open Client/Server Computing Executive Symposium in Toronto, William Connor, corporate vice president and director for information technology at GSS, said GSS' revenue had climbed to its 1993 level from $3.66 billion in 1992 and $2.85 billion in 1991. Total information technology costs, on the other hand, which include mainframes, Unix servers, PCs, software, data communications and information systems personnel, had dropped to 0.88% of total sales, down from 1.25% in 1992 and 1.42% in 1991.

Connor said the savings did not come from discounts on the Motorola Multipersonal Series 8000 Unix servers that run the company's business applications. "We paid the same as or more than what outside customers would pay for those computers." He conceded, however, that Motorola's size gives it an advantage in information technology purchasing power over most other manufacturers.

Freedom from mainframes

Scott Poteracki, director of finance for Motorola's computer group, said the biggest benefit to getting off the mainframe has been enabling his staff to perform queries and compile reports without having to go through IS.

His department uses Oracle Corp. products for general-ledger, fixed assets and accounts payable applications, FourGen Software, Inc. products for order processing and Aerum products for managing service contracts, service billing and customer support.

All of the computer group's manufacturing applications were developed in-house on mainframes and ported to run the Unix servers as Informix Software, Inc. applications.

Motorola's computer group had been using two IBM 4381 mainframes, Watz said, and paying about $2.5 million per year for the use of an IBM 3090 at the parent company's data center in Scottsdale, Ariz. On May 30 this year, the group unplugged its last mainframe. Now the group runs the business entirely on 11 Unix servers running Oracle and Informix databases supporting about 800 terminals at sites around the world.

Poteracki acknowledged that performance was a concern initially with the Unix servers. "I remember that early on we kind of struggled with tuning the machine and getting the disks organized correctly, but once that was done, we haven't really encountered any performance issues with the financial systems," he said.

Motorola did not push support personnel out with the mainframes, but instead retrained them. "We couldn't afford to lose their accumulated knowledge of our business processes," Connor said.

Application development cycle times now range from four to six months, compared with 18 to 24 months when using the mainframes. This aids what Connor called "re-re-engineering," a never-ending redesign of Motorola's business procedures and applications. "Our applications have a five-year maximum lifetime," he explained. "They are designed to be thrown away."

Grantham is a free-lance writer in Paris, Ontario.

Protection software

McAfee plugs virus defense gap

By Elisabeth Horwitt

■ McAfee Associates, Inc. in Santa Clara, Calif., has announced a program that is said to provide the first effective protection against a comparatively rare but particularly deadly form of virus invasion: the boot virus.

Boot viruses strike while the system boots itself up and before it activates its virus protection software. The most common mode of invasion occurs when the user boots up from an infected floppy disk.

Even though probability is low that such a virus will strike a given system, when it does, "it hits you where you are vulnerable," said Brent Williams, a program director at research firm International Data Corp. in Mountain View, Calif. Once the virus is activated, it can propagate across the system's files or even harm the system itself, he added.

McAfee's ROMshield installs itself as extended BIOS before the system accesses the boot and master boot record of a system disk. Once it is activated in memory, the system can detect the presence of boot viruses and suspend the boot process before infection takes place.

ROMshield also protects the system from direct writes to the hard disk boot sector and master boot record, which would propagate the virus.

The product is the first of a family of firmware-based network security management products that McAfee plans to introduce. Implementing the software in firmware will minimize system overhead, the company said. The ROMshield application occupies 4K bytes of read-only memory (ROM) and a data area of 1K byte in RAM.

ROMshield currently detects more than 300 master boot record infector viruses. It offers OEM-definable algorithms designed to prevent false alarms. The product is said to be compatible with all IBM PC, AT, Intel Corp. 80386, 1486 and Pentium systems with at least 640K bytes of RAM. It is operating system-, BIOS- and LAN-independent.

The product is available at a retail price of $69.99. However, OEMs will be the main channel. Relia Technologies, Inc. in Los Gatos, Calif. It plans this month to ship its Ethernet adapters equipped with a ROM chip version of ROMshield.

Notes

CONTINUED FROM PAGE 47

"lasting library of knowledge," she said.

After looking at Notes, GlobalStream Corp.'s TeamSync, Team Software's Channels, Galacticomm, Inc.'s Major BBS and CompuServe, the company settled on Trax's TeamTalk largely because it is robust yet easy to manage, Briten said.

"I don't get one problem call per week on this product. That's how reliable it is," Briten said.

The product supports Object Linking and Embedding 2.0, so Safeco users can share documents that contain embedded objects and all the object linking information will be retained, Briten said.

Two TeamTalk weaknesses that Briten cited will be fixed in upcoming versions, according to Trax. The company said it will add threading capabilities that add a hierarchical view of all threads in a topic by the end of the year. Also, it plans to add the ability to store the discussion information on database servers that support Microsoft's Open Database Connectivity standard, such as Oracle Corp.'s Oracle and SQL databases. That addition will enable wide-area network access via the databases' replication schemes, Trax said.

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CD-View helps manage CD-ROM networks

By Ben Rothke

All major software developers now ship their high-end products on CD-ROM. So how does a network manager effectively oversee CD-ROM use?

The answer I found was a product called CD-View from Ornetix in Sunnyvale, Calif. CD-View is software that loads on a Novell, Inc. NetWare-based workstation and enables users throughout the network to access and share data stored on the workstation's CD-ROM. CD-View makes the workstation's CD-ROM appear to be another NetWare volume, and the workstation appears to users as another server on the network.

PRODUCT test DRIVE

It should be noted that the appearance of the workstation as a Novell server does not mean that it really is one. CD-View is basically a terminate-and-stay-resident program that uses bindery emulation and NetWare Service Advertising Protocol packet broadcasts to emulate itself as a NetWare server.

The advantage of using software such as CD-View rather than a hardware solution is that software is much easier to install, configure and manage. In addition, if one has dynamically changing needs, a hardware-based solution takes a huge amount of time to move from station to station.

The beauty of CD-View is that it takes about five minutes to install and only about 300K bytes of disk space. Its manual documents each step of the installation, which makes the process painless.

The only significant decision that must be made is whether to use the workstation as a dedicated or nondedicated CD-View server. These parameters can easily be changed later.

Starting out: Read the manual

I originally set up my CD-View server in nondedicated mode, but when I tried to log in, my workstation hung. After numerous attempts, I called technical support. I was told that all technicians were busy and that they would call me back within four hours.

The receptionist was kind enough to suggest that I fax in the problem sheet describing the problem, which I did. About two minutes later, after perusing the documentation, I found a note stating that one should not attempt to log in to a nondedicated CD-View server because it will hang the workstation. Another case where RTM (Reading the Manual) helps.

A few minutes later, I did get a call back from technical support.

After completing the install, one treats the CD-View server as a normal NetWare server by setting up users, groups and so on. File permissions are extremely basic to set up because you can't write to a CD-ROM.

After about 15 minutes of tweaking, I had the CD-ROM spinning gleefully. I had set up the Microsoft Developers CD Library. Programmers were coding, and everyone was content. True, painless CD-ROM sharing had arrived at last.

Rothke is network computing manager at Track Data Corp. in New York.

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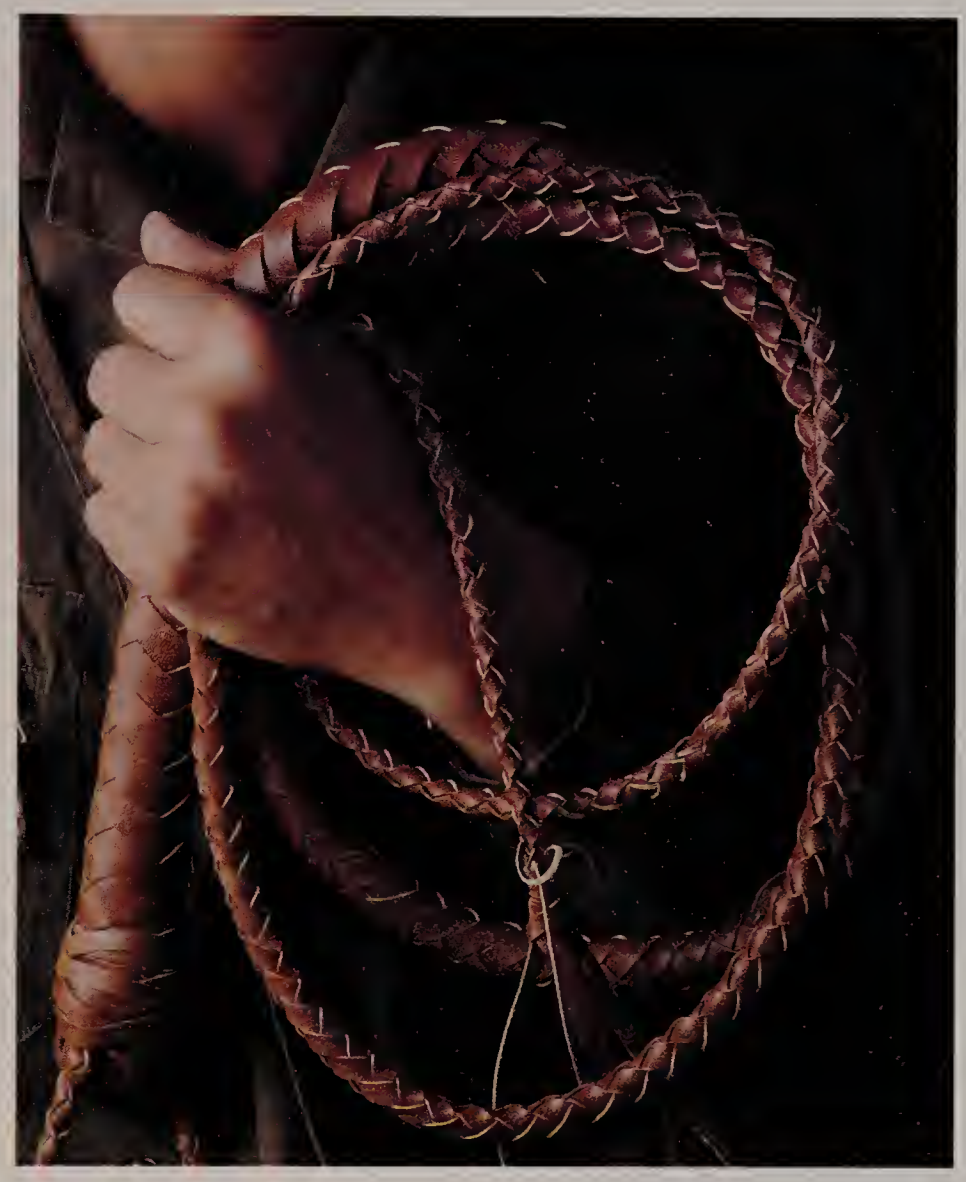

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New Products

Prentice Hall Professional Software has introduced the Executive Information System (EIS), a reporting, analysis and graphical-preparation tool for regional and home office executives.

According to the Atlanta company, EIS accepts data from conventional PCs running Prentice Hall software at individual property sites.

The product incorporates high-level data analysis capabilities with powerful relational database and graphics capabilities. A historical reporting feature lets users compare financial performance, gross revenue potential, collections and prospects from year to year.

EIS costs $3,500.

▶ *Prentice Hall Professional Software*
(404) 432-1996

Image LAN, Inc. has announced Epax Pro 2.0, customizable configuration analysis software.

According to the Nashua, N.H., firm, Epax Pro 2.0 verifies the proper configuration of PC environments and lets administrators determine the guidelines for a proper configuration.

Once guidelines are specified, the product will use those rules to analyze an unlimited number of systems.

Features include verification that proper software versions are installed, warnings that incorrect or missing information is contained in configuration files and configuration monitoring.

Epax Pro 2.0 costs $199.

▶ *Image LAN*
(602) 889-5889

Accton Technology Corp. has announced the EtherDuo Peripheral Component Interconnect (PCI) Ethernet adapter.

According to the San Jose, Calif., firm, the product handles data packets at rates of 50 to 100 MHz, depending on the microprocessor, and was designed for use in network servers and high-performance workstations.

The EtherDuo PCI adapter has a 32-bit data path with bus mastering, supports full-duplex Ethernet operations with data transfer rates of 20M bit/sec. in switched Ethernet applications and comes with Novell, Inc.'s NetWare Universal Client software.

The adapter has self-configuring 10Base-T and 10Base-2 ports.

The EtherDuo PCI adapter costs $249.

▶ *Accton Technology*
(408) 452-8900

American Power Conversion Corp. has introduced PowerChute Plus for OS/2 with support for Lotus Development Corp.'s Notes Release 3.

According to the West Kingston, R.I., firm, PowerChute Plus for OS/2, in conjunction with the company's uninterruptible power supply (UPS) systems, provides unattended shutdown of Notes OS/2 servers during an extended power interruption.

Other features include scheduled automatic UPS testing, a graphical user interface, dynamic software programmable UPS control and a historical data/event log.

PowerChute Plus for OS/2 is priced at $99.

▶ *American Power Conversion*
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Product short

Firesign Computer Co. has announced Outbound ClientServer 1.0, a product that lets users transfer files between the mainframe and the desktop and from desktop to desktop. Users can also upload data from remote desktops, perform remote printing, distribute software to remote offices and back up PC and network servers. Cost: Prices start at $29,995. Firesign Computer, San Francisco (415) 398-7228.

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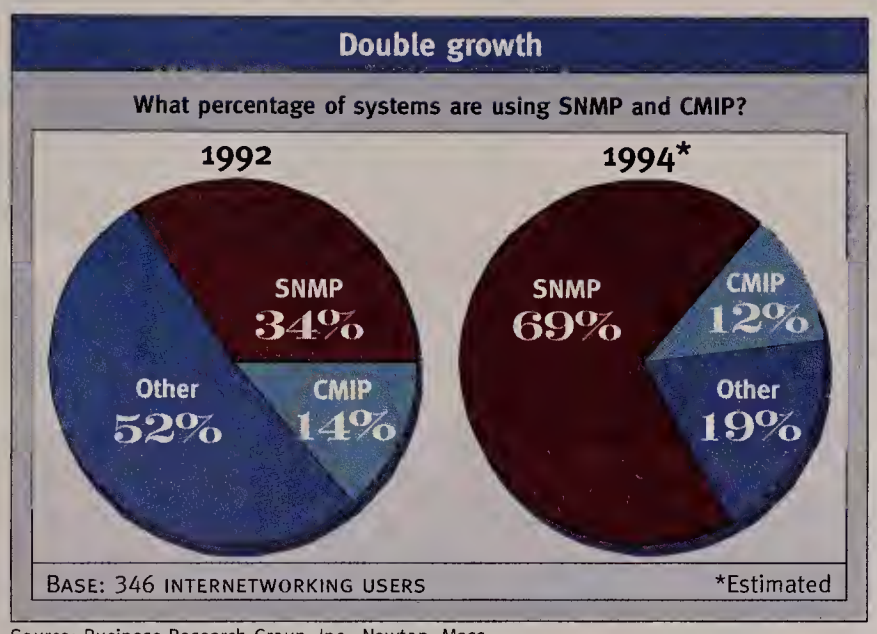
SNMP under scrutiny

Users question functionality, complexity of standard

By Steve Moore

Some users and vendors wonder whether Simple Network Management Protocol (SNMP) is living up to its name and if it might more aptly be called the Complex Box Monitoring Protocol. The standard is coming under fire for its tendency to generate excessive network monitoring data traffic as well as its inability to manage network connections.

"SNMP is up and running and doing useful work for us, but it's nowhere near the type of network command center environment that I envisioned," said Michael Prince, MIS director at the Burlington Coat Factory Warehouse Corp. in Lebanon, N.H. "We have nowhere near the number of things being monitored and controlled with it as we hoped when we got into it a couple of years ago."



Source: Business Research Group, Inc., Newton, Mass.

SNMP: The sequel

Critics say SNMP focuses on network devices but not network connections and that it supports basic monitoring but not actual command and control. The second version, albeit improved, adds significantly more complexity, they add. For these reasons, some observers maintain that the Common Management Information Protocol (CMIP) is a better choice for managing users' multivendor enterprise networks.

Users and vendors clearly are not stampeding to adopt the second version of SNMP, which addresses some of those concerns. One reason the second version might be slow to catch on is that vendors are implementing different pieces of it, but none are doing it exactly the same way.

Confusion about SNMP Versions 1 and 2 is another reason. Some portions of SNMP Version 2, including the manager-to-manager management information base (MIB) and the security features, could be rewritten for implementation within SNMP Version 1. Either way, "SNMP has a lot of proprietary extensions that in many cases are not documented to the general user," said Ray Williams, a senior technical staff member at IBM.

CMIP, by contrast, is already in use by tele-

SNMP, *page 60*

Users seem wary of modem release

By Michael Fitzgerald

Now that the first modems compliant with the new V.34 modem standard are shipping, data transfer rates will increase significantly, but there will be a temporary uptick in user headaches as the industry shifts to the new standard.

"It's going to get real interesting in the next six to eight months," said Joseph Niderost, editor-in-chief at *ATZ Magazine*, an on-line magazine based in Rio Rancho, N.M. To dispense copies of his publication, Niderost has almost every type of modem imaginable, from the standard Hayes Microcomputer Products, Inc. modems to beta versions of the new V.34 modems from Motorola, Inc.'s Transmission Line of Business.

Modem speeds

Modem type	Data transfer speed*
V.32bis	14.4K bit/sec.
V.32terbo	19.2K bit/sec.
V.fast	28.8K bit/sec.
V.34	28.8K bit/sec.

*Uncompressed data rate over clean telephone lines

Too much, too soon

Part of the reason it will be interesting for users such as Niderost is that vendors, including Motorola, jumped the gun on the 28.8K bit/sec. V.34 standard and introduced modems that run at 28.8K bit/sec. before there was a standard. These modems, known as V.fast class (V.fc), will not communicate with V.34 modems at 28.8K bit/sec. and instead drop down to 14.4K bit/sec.

Niderost, who also has V.fc modems, said, "Everyone got antsy and bought the prestandard modems. So the masses have V.fc."

The issue comes in trying to communicate at the higher speeds. Users cannot achieve 28.8K bit/sec. data rates unless transmissions are V.fc to V.fc or V.34 to V.34. Some modem makers, such as Motorola and Microcom, Inc., will upgrade their V.fc modems to V.34, but the modems will have to be sent back to the vendor for a hardware upgrade.

This hardware upgradability issue has some analysts nay-saying the V.fast standard.

"The V.fc stuff was always sort of a bad joke on users," said Ken Krechmer, technical editor at "Communications Standards Review" in Palo Alto, Calif. Krechmer predicted that "V.fast will vanish in a flash because it's not compatible with V.34." He added that unless users had purchased V.fc modems for communications between two sites, "they did not get what they paid for. They bought

Modems, *page 60*

Wireless competition considered mixed blessing for users

By Ellis Booker

The focus on the fortunes of Cellular Digital Packet Data (CDPD) has partially eclipsed competing technologies that customers will need to evaluate as they consider the usefulness of wireless to their business.

Along with CDPD, the airwaves soon will be crowded with traffic delivered via a mix of technologies including low-earth satellite systems, next-generation paging systems and high-bandwidth personal communications services networks.

Up and away

While only a $370 million market in 1993, the wireless data services market will grow to $2.7 billion by 1998, according to the Yankee Group. This year, the market is expected to hit $700 million.

Competition should drive down prices and encourage service innovation, according to analysts. However, market confusion could deter some users from committing to a wireless strategy while they wait for a shakeout among service providers, analysts said.

Earlier this month, in fact, the long-rumored split between the parents of Advanced Radio Data Information Services Network (ARDIS) — the nation's first public wireless packet data network — was confirmed. Motorola, Inc. agreed to acquire IBM's 50% share in the Lincolnshire, Ill., firm for an undisclosed amount.

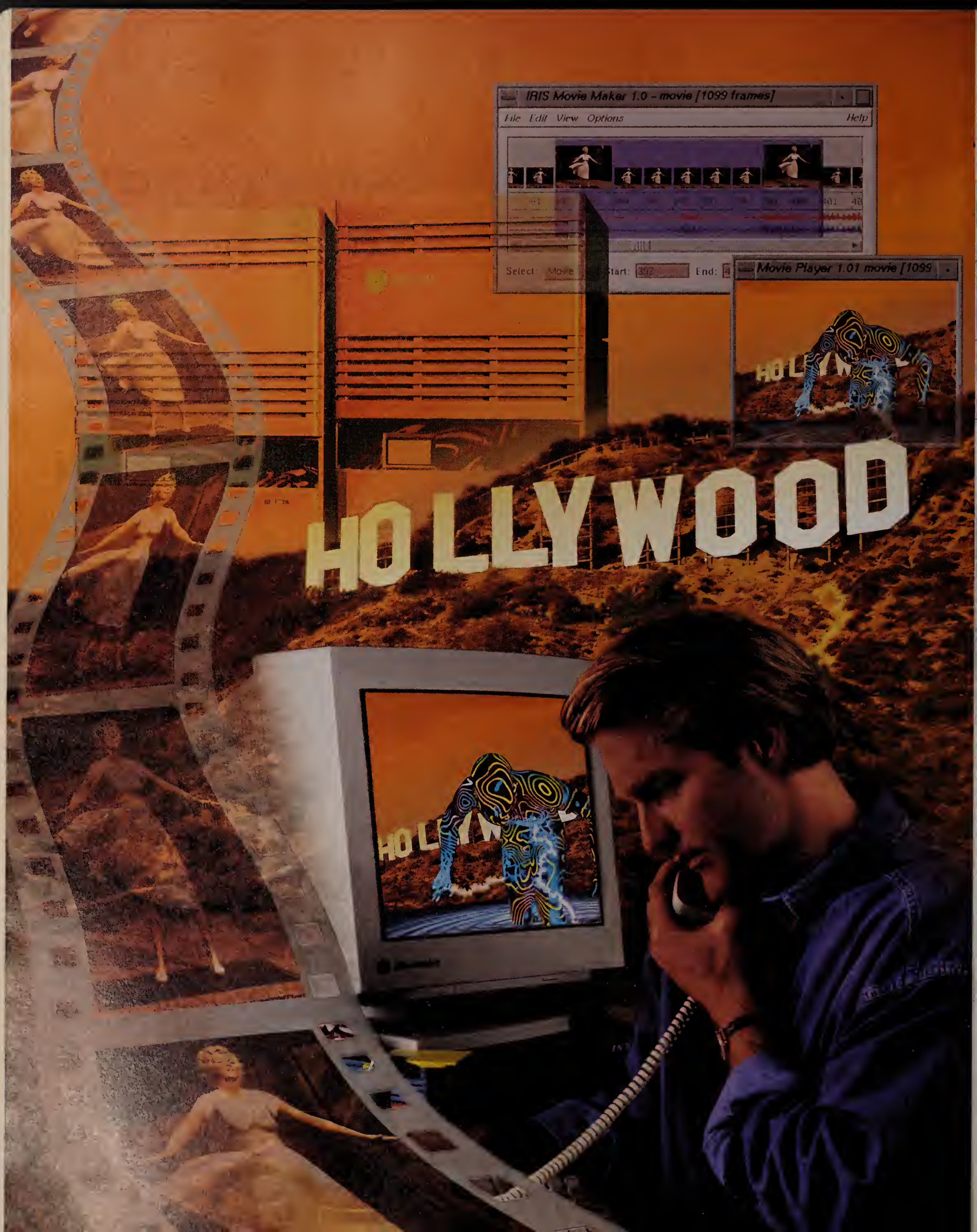
ARDIS officials put the best face on events, saying ARDIS will accelerate its network upgrade to 19.2K bit/sec. speeds in its Top 20 markets, up from four today. Regarding competition from CDPD, Walt Purnell, senior vice president of finance, said ARDIS was confident it will be ahead in price, national coverage and applications. He also said ARDIS would retain the IBM field service subscribers, which analysts said represent up to 70% of the ARDIS subscriber base.

The competition

Iain Gillott, manager of the wireless communications program at Link Research, Inc. in New York, as well as other wireless experts point to at least three CDPD competitors:

- Nextel, Inc.'s voice and data network, now operational in Los Angeles. Nextel got an important boost from a 17% equity investment by MCI Communications Corp. earlier this year.
- Mobile Telecommunication Technologies Corp. (Mtel)'s next-generation Nationwide Wireless Network paging network, based in part on the company's very successful SkyTel paging system.
- American Mobile Satellite Corp.'s satellite-based voice and data system, which is scheduled for commercial service in the first half of 1995.

Overall, however, cellular providers are probably in the best position to "do what's necessary" to cultivate wireless markets, said Ira Brodsky, president of Datacomm Research, Inc. in Wilmette, Ill. He noted that the availability (or promise) of nationwide coverage seems to be an important selling point with customers. Wireless networks restricted to one metropolitan area have not fared well to date, he said.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Health care looks to ATM for imaging apps

By Stephen P. Klett Jr.

While the masses may be holding back from delving into Asynchronous Transfer Mode (ATM) until it becomes more mature and affordable, some early adopters are already beginning to realize some of its benefits.

For instance, researchers at Johns Hopkins University's School of Medicine and the University of Maryland Medical Center in Baltimore are implementing a trial ATM network as the backbone of a project designed to more efficiently treat children born with abnormal skulls. UB Networks, Inc. and LightStream Corp. have donated ATM equipment, funding and communications training to the project.

Image-mania

Researchers at Johns Hopkins University's School of Medicine and the University of Maryland Medical Center are transferring 24G bytes worth of images each day.

A second opinion

For now, the immediate benefit of the ATM network is that physicians in different institutions can simultaneously study the same X-ray images during a consultation, said Joan T. Richtsmeier, associate professor of cell biology, anatomy and plastic surgery at Johns Hopkins.

Two LightStream 2010 ATM switches connect the Johns Hopkins and University of Maryland campuses via ATM over a leased T1 line operating at 1.5M bit/sec. A switched Ethernet Access/One hub from UB Networks connects a network of Silicon Graphics, Inc. workstations to the Johns Hopkins switch via an Ethernet connection on a Cisco Systems, Inc. router. At the University of Maryland, scanners in the radiology department connect to the 2010 switch via a Cisco router over frame relay.

Johns Hopkins' Center for Biomedical Visualization needed the high bandwidth and speeds of ATM to develop advanced modeling applications that will help surgeons predict future growth patterns of cranial defects.

"The ability [of ATM] to simultaneously handle data, image, video and voice traffic among medical institutions at different locations will eventually be used to accelerate many areas of medical research," said Carey Kriz, co-director of the center for information-enhanced medicine at Johns Hopkins.

For example, researchers are building a massive database of magnetic resonance imaging and computed tomography scans of patients' skulls, which technicians or physicians connected to the network can access. ATM was the only technology available that could transfer the imaged files — each of which contains an average of 50M bytes of data — between the two campuses, according to Kriz. The database currently holds approximately 300 patient cases.

These images are used to predict the effect normal growth will have after surgery is performed to correct skull abnormalities in children. It is hoped that this will eliminate the need to repeat the same surgeries two or three years later. The center predicts the project will eventually lead to the availability of computerized growth reference models to directly aid surgeons in the operating room.

The project's long-term goal is for the image database to become a national archive, accessible to researchers around the country who will be able to read and modify the data. However, higher bandwidth will be needed as more researchers begin to use the network to transfer images.

Johns Hopkins' Carey Kriz: *ATM technology is being used to study skull development for use during reconstructive surgery*

To meet this need, the network will be upgraded in three areas. First, the campus backbone at Johns Hopkins will be upgraded from Ethernet to Fiber Distributed Data Interface (FDDI). Second, the link between the existing routers and ATM switches will be upgraded to FDDI. Then the wide-area link between the two 2010 switches will be upgraded from a leased T1 line to a T3 line.

The right direction

Industry observers said ATM's future depends on its ability to handle applications such as this. The need for instant geographic access to huge imaging and graphic files is one of the early drivers for ATM, said Charlie Robbins, a vice president at Aberdeen Group, a consultancy in Boston. "The medical imaging trial at Hopkins is another step along the path to mainstream user acceptance" for ATM, he said.

ATM is gathering steam in the health care industry because it can handle large graphics files and support videoconferencing applications.

For example, the Allegheny Health, Education and Research Foundation (AHERF) and Fore Systems, Inc., both in Pittsburgh, are working together to identify, develop and implement ATM-based medical applications. Some of the applications they are exploring include videoconferencing, medical image distribution and remote diagnosis.

Within reach?

However, while cost is usually no object for early adopters such as Johns Hopkins and AHERF, these institutions realize ATM has to be more affordable before other institutions across the country can use their applications.

"We need to figure out how to get these models to run on affordable platforms or no one will use them," Kriz said. He added that he does not want to need a Cray Research, Inc. supercomputer "in the basement to make it work."

SNMP under scrutiny by users

CONTINUED FROM PAGE 57

communications service providers, which must minimize such proprietary maneuvering if their internal networks are to interoperate nationwide and worldwide in support of user networks.

Vendors waver

Even leading network management platform vendors are still unsure how best to implement SNMP. "We're definitely committed" to support SNMP Version 2, but "the key question is which components will be supported," said Gordon MacKinney, OpenView Program Manager at Hewlett-Packard Co.

Although the manager-to-manager MIB is intended to ease users' excessive SNMP traffic, no major network management platform vendor currently is saying when that portion of SNMP will be made available to users. SunSoft, Inc. for example, already has an implementation of Version 2 "that does not implement the manager-to-manager MIB, and we're still gauging the actual demand for that from both customers and developers," said Joe Matibag, senior product development manager at SunSoft's enterprise management business unit.

Regardless of whether SNMP or CMIP is the basis for future network management products, users want the ability to manage the network itself as well as the devices attached to it. "I have a network that's spread out across the entire state of Utah, and I don't have people that can quickly drop an analyzer into any given segment of the network," said Rolen Yoshinaga, director of information technology at the Utah Administrative Office of Courts in Salt Lake City.

Yoshinaga added that "I would like to see something that allows me from my centrist viewpoint to be able to analyze specific traffic and give me specific faulting components even on a remote segment."

Users not clamoring

Williams called SNMP an interim technology best suited to smaller user networks, while CMIP already supports all the functions proposed for both versions of SNMP and more. "After a year of talking to a wide group of users and vendors, our assessment was that there was no demand from the customers for SNMP Version 2," he said. Nevertheless major vendors will have to support both SNMP and CMIP for some time to come, he added.

Modems

CONTINUED FROM PAGE 57

modems that are just like the AT&T V.32terbo — not a standard that is produced widely."

The V.fc modems lack V.8, the protocol that lets a V.34 modem make the "handshake" connection to another V.34 modem for both to connect at 28.8K bit/sec. The handshake between modems is the high-pitched whine heard before a modem connects. Without the proper handshake, the modems will drop in speed until they find a protocol where they can connect.

One problem here is that users may not know what transmission rate they are getting because communications software typically makes connections in the background, so users do not see the speed of the connection.

Another issue for V.34 is that it will not have a 28.8K bit/sec. fax standard for some time, so users will continue to get a 14.4K bit/sec. rate for faxes.

Niderost said his beta tests have shown one advantage of V.fc over V.34. It works better over telephone lines that do not send a clean signal.

"V.34 uses the full bandwidth of the phone line, and it's hard for error-correcting to work in that environment," Niderost said.

He said his V.fc modems hit 28.8K bit/sec. over bad lines about 25% of the time, while the V.34 modems typically achieve rates no faster than 26.4K bit/sec. on bad lines.

Positive response

Still, users are not unhappy to see the new standard, which should get final ratification this fall.

"We will go to V.34, as soon as all the I's are dotted and the T's are crossed," said John Woods, PC systems specialist at Chevron Information Technology Co. in San Ramon, Calif. Woods said the faster data rates should make the upgrade cost-efficient by savings achieved on the telecommunications side.

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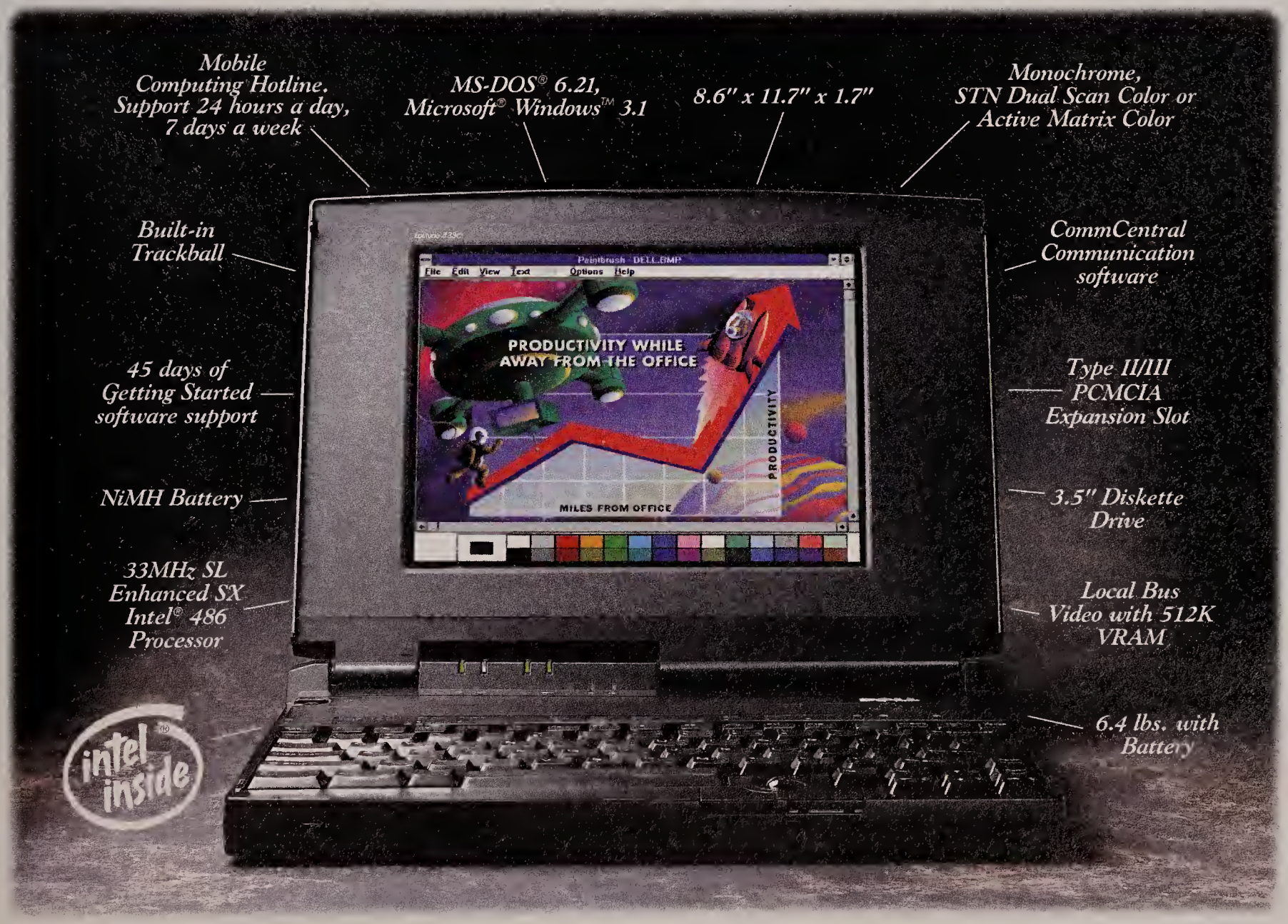

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Dannon adds EDI to its culture

Firm among first dairy producers to adopt technology

By Thomas Hoffman
TARRYTOWN, N.Y.

Electronic data interchange (EDI) has long been an accepted business practice for most large retailers, distributors and manufacturers who use networked systems to route their product orders and transfer invoices more efficiently than by mail or fax.

However, the technology has not gained acceptance as quickly in certain time-sensitive grocery niches such as the dairy market. Unlike dry goods, products with short shelf lives such as cottage cheese and yogurt can ill afford to become victims of technical snafus such as server crashes or misplaced messages.

"Perishable product companies have tended to not be as involved with technology from the onset," said Jerry Morton, a principal at Store Systems Consulting & Marketing, a Lawrence, Kan., retail technology consulting firm.

Blueberry, strawberry or coffee?

As supermarkets and dairy manufacturers become more sophisticated in their use of technology, they are increasingly using EDI systems as marketing weapons to determine which product flavors are top sellers and which are languishing on valuable shelf space, Morton said.

"Technology has advanced today to the level of sophistication where retailers understand the importance of getting it down to an item and flavor level for what actually sells," he added.

As a result, dairy producers and their distributors have become more aggressive in implementing EDI systems to leverage their abilities to reduce paper-based order processing, invoicing errors and costs while streamlining efficiency between producers and suppliers. Such benefits recently prompted The Dannon Co. to install its first EDI network with its core distributors.

"If you make a mistake [using EDI] with dry goods, you can turn it around. Yogurt doesn't turn to cheese — it just goes bad," said Mark Nelson, director of sales and marketing systems at Dannon, a $350 million unit of the $10 billion French food conglomerate BSN S.A., which is also known for its Evian spring water.

Dannon began evaluating EDI last year in a four-month pilot with two customers that concluded in October. The pilot was intended to serve as an educational exercise, Dannon executives said. Since then, Dannon has been modifying the EDI network to satisfy a larger number of networked clients.

"One of the biggest lessons we learned was the need to link our finished goods inventory with the EDI network," said Crystal Kennedy, Dannon's director of information services.

Executives at Meijer, Inc., a Grand Rapids, Mich.-based grocery chain and a Dannon EDI pilot participant, declined to discuss the project for what they deemed "proprietary reasons."

Healthy niche

As American consumers continue to be more health-conscious, yogurt has become one of the most profitable shelf items in the dairy grocery business. As demand for it has risen, so too has the need for efficient and accurate order processing, Kennedy said.

Even though Dannon continues to dominate the U.S. yogurt industry, heightened competition from General Mills, Inc., Kraft General Foods USA and private brand labels has forced the company with "the fruit on the bottom of the cup" to spoon up its technical assets.

In 1992 — the last year for which industry figures were available — Dannon accounted for 32.8% of the $1.4 billion U.S. yogurt market, according to the International Dairy-Deli-Bakery Association in Madison, Wis. Yoplait, a subsidiary of Minneapolis-based General Mills, was second with a 19.2% share, followed by Kraft, whose Light & Lively came in third with a 13.5% share.

Manual mistakes

Prior to the EDI pilot, Dannon relied on fax-based purchase order and invoice transmissions between itself and its wholesale food brokers. However, that process required Dannon's customer service representatives to manually key in customer orders and invoice amounts, a cumbersome and mistake-prone undertaking.

Once Dannon completes a phased-in rollout of the EDI network to 20 of its leading trading partners by year's end, the U.S. yogurt king expects to reduce its labor and fax-based communications costs by $300,000 to $500,000 annually, according to Richard Kravchuk, Dannon's director of manufacturing systems.

With EDI, "we expect to get more timely and accurate data on our customer orders," Kravchuk said.

Two months ago, Dannon installed invoicing and purchase order software modules for the EDI network from Premenos Corp. in Concord, Calif. The software resides on an IBM AS/400 Model E60 midrange machine, which runs Dannon's financial operations. The AS/400 is attached via modem links to OrderNet, a Columbus, Ohio-based retail order-processing network.

Using OrderNet, Dannon can drop an invoice into a customer's mailbox that can be retrieved and responded to via modem. To help facilitate electronic funds transfer between Dannon and its brokers over the EDI network, the yogurt giant is working out a contract with Citibank NA for transfer services, according to Kennedy.

Dannon plans to connect its order-entry and finished goods inventory manufacturing systems — which run on Hewlett-Packard Co. HP 9000 Unix-based machines — onto the EDI network by August. That will be made possible when the company adds IBM's latest OS/400 operating system release, which supports data transfers between disparate platforms via TCP/IP. "The AS/400 had been the roadblock for this, but we're pleased with IBM's direction," Kennedy said.

Overall, the triumvirate that makes up Dannon's office of chief information officer said they are excited about the prospects of EDI. "Our sales force is solidly behind EDI," Nelson said. "Many customers have demanded it, and our salespeople want to provide it as an additional sales tool. There's a strong perceived need for it."

CLAUDIO EDINGER

Dannon's CIO triumvirate, *(left to right) Mark Nelson, Crystal Kennedy and Richard Kravchuk: Excited about the prospects of EDI*

ON SITE

The Dannon Co.
Tarrytown, N.Y.

Challenge: To reduce paper-based errors on invoices and purchase orders with an EDI network between Dannon's headquarters and its primary wholesale food brokers.

Technology: Premenos' EDI software, IBM AS/400 Model E60, HP 9000 machines, Citibank electronic funds transfer services and IBM OS/400 operating system software.

Anticipated results: Company expects to reduce data-entry labor and fax-based communications costs by $300,000 to $500,000 annually.

New Products

Cabletron Systems, Inc. has announced the E2200 series, a family of full-duplex Ethernet desktop network interface cards for XT/AT bus systems.

According to the Rochester, N.H., company, the E2200 cards support a variety of media types and all major operating systems.

The E2200 cards can run in full-duplex, 20M byte/sec. Ethernet mode or 10M byte/sec. Ethernet mode.

The cards implement plug-and-play specifications and are bus mastered, so no memory needs to be allocated in the host system or the card. Data is transferred through the PC's processor, saving memory for end-user applications.

The four styles are the following: E2210 for attachment unit interface and unshielded twisted pair (UTP) wiring, E2212 for UTP and coaxial cable, E2219 for UTP and E221W for wireless or UTP.

Prices range from $349 to $449.

▶ *Cabletron*
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RG Software Systems, Inc. has introduced Vi-Spy Universal Network Installable Module, an antivirus software package that provides continuous real-time monitoring of all I/O activity, centralized virus incident reporting, software management and distribution.

According to the Scottsdale, Ariz., company, the product's network independence lets companies with multiple server platforms maintain a standardized antivirus program for all DOS workstations.

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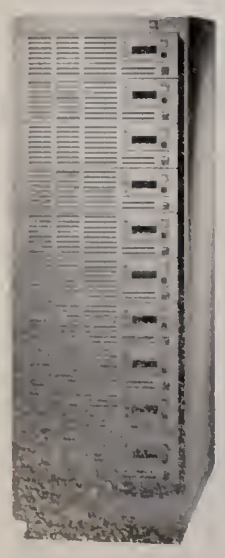

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IBM and CA enhance database features

Most users pleased with results, but others say they're too late

By Thomas Hoffman

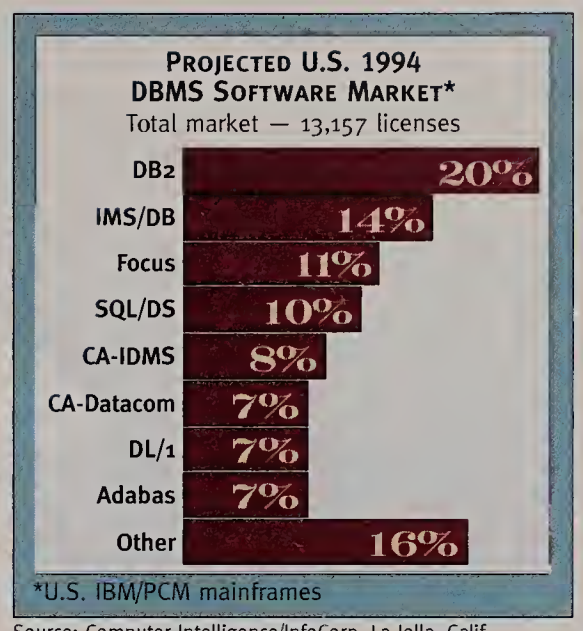
As departmental users continue to shift the bulk of their report generation and information processing to fast, easy-to-use desktop environments, seamless access to legacy data has become more critical than ever. Fortunately, leading mainframe database vendors have been adding much-needed functionality to help address these requirements.

closer LOOK DBMS

Computer Associates International, Inc., for example, recently added an optional SQL compiler to its CA-IDMS Version 12.0 package. The compiler lets users access and integrate legacy data with desktop applications such as Lotus Development Corp.'s 1-2-3 spreadsheets. For its part, IBM is enhancing replication, performance and availability of its DB2 Version 4.1 database, which will go into beta testing later this year and will begin shipping by the middle of next year.

Those enhancements have generally been well received by customers — and that is good news for IBM and CA, which face growing competition from distributed relational database management leaders such as Oracle Corp., Sybase, Inc. and Informix Software, Inc.

Enhancements brought to the fore by the Unix-oriented database vendors "are forcing the mainframe database bunch to extend and enhance their products," said Peter Kastner, a vice president at Aberdeen Group, a Boston consultancy. For example, Kastner pointed out how the competitive market pressured IBM to add stored procedures capabilities to the next release of DB2.



Source: Computer Intelligence/InfoCorp, La Jolla, Calif.

IBM has roughly 4,000 DB2 user sites. The number of users, or DB2 seats, continues to grow each year, according to David McGovearn, president of Alternative Technologies, a consultancy in Boulder Creek, Calif.

Still, the number of DB2 licenses that IBM supports has shrunk dramatically in recent years due to industrywide data center consolidations and users moving to other distributed database environments, McGovearn said. "The number of [DB2] licenses out there has dropped off considerably," he said.

Unix influence

With competition from independent database giants such as Oracle and Sybase intensifying, IBM and CA have no choice but to react, analysts said. "The mainframe [database vendors] guys are trying to add features that were popularized in the Unix world, like replication, stored procedures and triggers," said Ed Acly, director of software research at Technology Investment Strategies Corp. in Framingham, Mass.

For database administrators, Open Database Connectivity (ODBC) and SQL interfaces between mainframe databases and PC networks have helped satisfy

Database, *page 69*

IBM's usage pricing offers limited savings

By Craig Stedman

■ As the hoopla surrounding IBM's April announcement of measured usage pricing on some mainframe software products dies down, large shops are finding the approach intriguing but still limited in usefulness.

Under the usage plan, customers pay for software based on the amount of processor service units the software uses. This differs from the traditional tiered licensing mechanism used widely in the mainframe software industry, where customers pay for software based on the model it is running on.

One limitation of the usage plan, customers said, is the small number of products eligible so far, which includes only the CICS and IMS transaction monitors, plus IBM's TSO/E software. IBM has promised to add support for its DB2 and IMS databases but must first correct overhead problems caused by the tools used to track the number of service units the software is actually consuming.

Another limitation is that in order for customers to see any savings over the traditional tiered pricing model, the amount of system MIPS used by CICS, for example, needs to be quite low, users and analysts said. With CICS or IMS, high-end mainframe users would not see any benefits above 18% utilization, according to Meta Group, Inc. in Westport, Conn.

"The early indications are that you would have to be using a product pretty lightly on a big machine. And if you've got fairly mature production systems like we do, you're already running those pretty hard," said Douglas Underhill, a technical specialist at CSX Technology, Inc., the information systems subsidiary of CSX Corp. in Jacksonville, Fla.

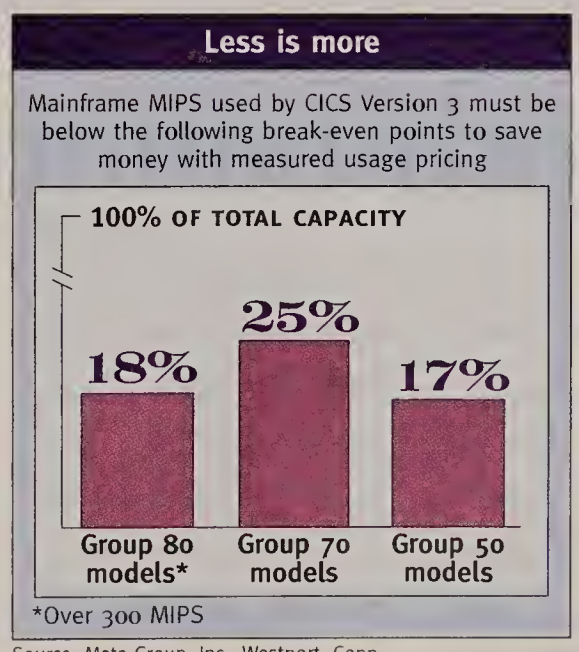
CSX is testing the measured usage approach but does not expect savings on any of the three products now supported, Underhill said. Although its IMS transaction monitor usage is relatively light, IBM's reliance on peak daily usage over the course of a month to set the pricing rate will likely put even IMS over the break-even point, he added.

Flexible structure

Nonetheless, IBM's move toward usage-based pricing "is encouraging, even if it doesn't apply to us," Underhill said. "It's a good avenue for getting some flexibility into the pricing structure." Measured usage could also provide a cost-effective way to move applications among different systems since it eliminates the need to buy separate licenses for each machine, he noted.

Paul Quade, manager of capital planning and resource management at Galileo International, an on-line reservation consortium in Englewood, Colo., said it will likely save some money on CICS by going to measured usage pricing. Galileo uses CICS as the front end to databases, not as a full transaction environment, and its system utilization is below 5% as a result, he said.

While the benefits of measured usage will be limited to such cases, many customers are likely to have isolated examples where they will qualify, Quade added. "And at least the way IBM has it set up, you can't do any worse than you do now. You always have the option" to stay with tiered pricing.



Source: Meta Group, Inc., Westport, Conn.

Mike Egan, program director of enterprise data center strategies at Meta Group, said usage pricing can potentially shave 20% to 40% off the cost of tiered licenses. But system utilization generally has to be below 10% to get that kind of savings, he added.

"Almost anyone running CICS is running it so hard that they're not going to see any benefit," Egan said. Customers are also ineligible for IBM's 25% Distributed Site License Option discount if they opt for measured usage pricing, another issue that has to be considered, he noted.

Limited returns

Less than a third of CICS sites are likely to save with measured usage, said Karen Cone, a software analyst at Gartner Group, Inc. in Stamford, Conn. IBM has openly indicated that the pricing was aimed at users with below-average levels of MIPS consumption, Cone said.

"We never pretended that it would be a panacea," an IBM official said, adding that the company was concerned that measured usage "would be seen as more than it really was." Its usefulness should widen later this year when DB2 and IMS database support is added.

Some users desperate for mainframe price relief hope measured usage will be more prominent in the future. "We haven't really seen any software vendors do anything to reduce the costs of mainframe computing yet," said John Elcock, an assistant vice president at General Accident Insurance of America in Philadelphia. "Measured usage is needed."

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Database

CONTINUED FROM PAGE 67

demanding user bases. "It sounds like marketing hype, but in reality, users have been empowered by being able to generate their own reports using ODBC tools like [CA's] Qbyx," said James Bradshaw, director of database administration for administrative programming services at Clemson University in Clemson, S.C.

At Clemson, one of the first beta sites to test SQL commands in CA-IDMS 12.0, increased access to legacy data has been a boon for the institutional advancement division, a unit that handles relations with alumni and corporate benefactors. The addition of an SQL optimizer to CA-IDMS, for example, has enabled the group to more easily manipulate demographic information on alumni via Intel Corp.'s 1486-based workstations, Bradshaw said.

Rich Malone *at Edward D. Jones & Co. says IBM's DB2 was a better fit*

The PC-to-host connections give Clemson a faster, more graphical and cost-effective approach to legacy data access than the university's historical dumb terminal connections, Bradshaw said. "The ODBC tools — combined with the SQL optimizer — has given us the ability to access live data at a reasonable cost," he said.

Mixed response

Dresser-Rand Co. is another satisfied CA-IDMS 12.0 customer, thanks to the ODBC and SQL enhancements, according to Kip Winrow, a programmer analyst at the gas engine compressor manufacturer in Painted Post, N.Y.

Dresser-Rand, which has been using a production retrieval version of CA-IDMS 12.0 since April, has been able to use workstations to code mainframe-based engineering programs via the SQL optimizer. Depending on the database structure, coding engineering applications on workstations takes one hour — instead of the 10 hours it took through the mainframe, Winrow said.

But for all of the CA-IDMS customers who have embraced the SQL and ODBC features, several others have complained that the enhancements were not made quickly enough. At the same time, some analysts and users have been upbeat about IBM's aggressive approach to future mainframe versions of DB2 for its MVS/ESA environment — a tack that has started to make IBM converts out of some shops that have historically gone with CA wares.

Expansion brings change

Edward D. Jones & Co. is one such convert. From 1984 to 1992, the Maryland Heights, Mo., brokerage developed the bulk of its mainframe applications under CA-IDMS. As the company expanded to 3,000 offices nationwide, support for multiple data center sites became a necessity.

But because CA has yet to provide simultaneous database updates and recoveries between separate physical locations, the brokerage bet its future mainframe application development on IBM's DB2 some 18 months ago.

"We weren't confident with the direction" of CA-IDMS, said Rich Malone, a principal responsible for data processing at the brokerage. "CA supported [CA-IDMS] well, but we felt DB2 was a better fit for our applications and our direction."

Although Edward D. Jones does not rely much on third-party software, the more widespread availability of DB2 applications such as human resources software vs. CA-IDMS also played a significant role in the choice, Malone said.

Still, the brokerage's decision to develop in DB2 in no way reflects its plans to adopt a downsized Unix version of the software — called DB2/6000 — as it begins rolling out client/server platforms, Malone said. "Other databases are better designed for the distributed environment," he said.

Going with Cobol

Elsewhere, a major Dallas-based health care products manufacturer plans to upgrade to CA-Datacom/dB Version 8.1 when the upgraded database begins shipping this fall. But while 60% of the company's core financial applications are written in CA-Datacom and CA-Ideal, future application development for the firm's order-entry systems will be done with Cobol and DB2, said John Hansel, a database administrator at the company.

Hansel said the company's decision to go with DB2 was politically — not technically — driven. "Our former [chief information officer] had some battles with CA, and all of our upgrade plans kind of went dormant," Hansel said. "It's a shame, I guess, that Datacom isn't on the list. Of course, I'm somewhat biased since I'm the Datacom" database administrator.

Briefs

At your convenience

Dairy Mart Convenience Stores, Inc. signed a five-year outsourcing agreement with **Unisys Corp.** Under the contract, Unisys will provide Dairy Mart with systems support services, database management and operational responsibility for mainframe and distributed systems for the Enfield, Conn.-based chain.

DG teams with Insci

Data General Corp. will cooperatively market a system that lets users retrieve mainframe data via optical disc, rather than line printers, microfiche or tape output. The alliance is with **Insci Corp.**, a data management firm. The system includes DG Aviion servers running Insci's Coinserv data management software, connecting to a 12-in. write-once read-many optical drive.

Control Data wins Russian deal

Control Data Systems, Inc. in Arden Hills, Minn., has disclosed a $7 million contract from one of Russia's largest oil-producing districts. Under the terms of the contract, Control Data will serve as the prime integrator in the creation of regulatory and computer frameworks for an energy resource infrastructure administration system in Khanty-Mansiysk, which is an autonomous district in Western Siberia.

IBM receives GIS contracts

IBM has won a $276 million contract to build a geographic information system (GIS) that helps the U.S. Forest Service manage the national forests. The system will serve 34,000 users. The contract, which observers called "the last of the big federal GIS buys," is part of the agency's plan to replace aging Data General Corp. minicomputers with client/server systems, according to market researcher Federal Sources, Inc. in McLean, Va.

Commentary

Ted Krum

IBM's future has promise

After three agonizing years, IBM has emerged from its free fall and will surely survive, albeit as a much smaller company. Medium Blue still has the technology, products and service capability to meet all the needs of large organizations. I question, however, whether this should still be its goal.

IBM's future depends on maintaining a competitive pace and cost level. While Louis Gerstner has done an admirable job of reestablishing fiscal balance and protecting the company's top-tier status, he now needs to pick a more focused target and run for it at full speed, dropping anything he can't carry along the way.

Reassuring users

If I were a corporate customer today, wondering if IBM will be able to meet all my future needs, I might be reassured by the full range of systems, operating systems, ancillary hardware and services it offers. As an analyst, however, I do not find this reassuring at all.

Only the largest vendors can still afford to support more than one architecture. No vendor can afford to support more than two because the costs of replicating development, production, marketing and support overhead are too great for the incremental sales generated.

IBM's decision to migrate the AS/400 to RISC shows it is thinking in the right direction, but the better move would be to reimplement AS/400 software on the RS/6000 and reduce the AS/400 business unit to a skeleton crew. Hewlett-Packard's experience with its MPE operating system over the past four years proves that if new products are compelling, a proprietary system's installed base can be railroaded onto a new architecture without a catastrophic loss of business. Before its metamorphosis is complete, IBM will have to merge or discontinue several product lines in this way.

Similarly, customers should no longer take comfort in the fact that IBM remains a powerhouse in basic research. A few years ago when IS professionals were baffled by the variety of specialized parallel processing architectures, IBM comforted them by saying it "embraces all forms of parallelism." The company can no longer afford to make such statements, let alone back them up.

Narrow the focus

Finally, IBM's stated intent to emphasize systems integration and consulting may encourage businesses struggling to re-engineer themselves. Unfortunately, systems integration and consulting have become code words in the industry for redeploying skilled workers who can no longer be supported by declining hardware sales. IBM's plan to reorganize its sales force by client industry offers more promise because real vertical market expertise in the field could help tighten the rest of the company's focus.

Economic recovery in Europe and Japan next year may allow IBM to return to profitability, giving it time to decide what to do next. This would be the worst possible outcome because to carry out needed reforms, IBMers need to dread something more than they dread change. Markets and technology are moving faster today than ever before so that every year wasted in indecision will redouble the strain and risk of catching up from a lagging cost level. For IBM today, another year might as well be forever.

Krum is a senior research analyst at RCB International in Stamford, Conn. His E-mail address is Tedkrum@aol.com.

Electronic medical records

Scottish hospital unwraps paperless system

By Mitch Betts

Considering the hassles of converting old systems to newer technologies, this seems like a dream job: build state-of-the-art information systems for a brand new, $270 million hospital from scratch. No legacy systems involved.

The result may be the world's first hospital with paperless medical records from the outset. The 260-bed Health Care International Ltd. (HCI) medical center opened last month in Clydebank, Scotland, near Glasgow.

The dream job went to Rick Taylor, senior director of information services, and Nick Beard, the IS director responsible for clinical information systems. But Beard acknowledged that even this envious project had its challenges.

Starting from scratch

For one thing, it had to be done in just 18 months, from a blank sheet of paper to a functioning hospital information system. For another, the developers faced the interesting problem of having no users because the facility was still under construction.

"The typical approach of having hordes of analyst/programmers descending on users to determine their requirements was out of the question," Beard said. "However, this was a double-edged sword."

The lack of user committees meant the project could move more quickly, but the IS department had to hire systems analysts with experience in hospital processes. So, the IS development team included a physician, two nurses, a pharmacist and laboratory technicians, said Beard, who has a medical degree as well as a degree in software engineering.

They came up with a system based on an integrated suite of hospital applications known as Healthcare Network Architecture from Cerner Corp. in Kansas City, Mo. The applications and database run on a Digital Equipment Corp. VAX 7610 with about 200 users.

IS director Nick Beard *stands in front of Scotland's $270 million Health Care International medical center*

Beneficial access

The advantage of an all-electronic medical record is that the files are always accessible to doctors at any terminal in the building, whereas studies show that paper charts are missing 30% of the time, Beard said.

Uniquely, HCI does not have a traditional medical records department, and it employs no medical records clerks.

The biggest challenge of all, Beard said, was creating a user interface for direct use by the doctors, who are notorious for disliking computers. The system uses checklist forms that are completed by using a mouse. Pen and voice input are possible options for the future.

Senior physicians were the slowest to warm up to the new system, Beard acknowledged. "They have traditionally been shielded from the inefficiencies of traditional paper systems by nurses and junior doctors," he said.

"Had the doctors been directly accustomed to having to complete their own forms or locate data lost in mounds of paper, they would have appreciated the benefits of the electronic medical record more swiftly," Beard added.

Foreign affairs

Because HCI is a private-sector hospital, it did not have to abide by European Community procurement rules, which would have prevented it from buying software from a U.S. vendor. On the other hand, Beard noted that the U.S. software had to be adapted to an international environment.

"For some reason, U.S. programmers do not seem to realize that the population of the rest of the world might not always be described by Firstname X. Lastname," Beard said. Similarly, HCI had to insist on a date format that was clear to all staffers at the decidedly international facility.

The hospital is the brainchild of two former Harvard Medical School professors who wanted a world-class facility to which patients from Europe, North Africa and the Middle East could fly for advanced surgical care not available in their countries. HCI is located on a 47-acre site eight miles from the Glasgow airport.

Beard said the next IS project will be to integrate the doctors' dictation systems with the electronic medical records.

Information Builders boosts data management tools

Users pleased with enhancements but hope EDA/SQL Release 3 will address basic access issues

By Rosemary Cafasso

■ While Information Builders, Inc. is positioning the latest release of Enterprise Data Access/SQL as a full-blown data management tool set, some key customers said they are more interested in Release 3's improvements in basic data access.

"My focus is connectivity, getting people from here to there," said Hollis Miller, manager of integrated desktop services at BellSouth Telecommunications in Birmingham, Ala.

BellSouth beta-tested the Hub Server component of EDA/SQL Release 3, a software function that provides a single point of control for routing users to the different databases to which they need access.

Stepping up

Information Builder's EDA/SQL, launched three years ago, is middleware software that primarily provides a large collection of gateways to the most commonly used databases. With Release 3, Information Builders hopes to move up a notch as a provider of a far broader set of distributed data management tools, Adaysoft said.

"They are doing things to move beyond being a gateway provider," said Chet Geschickter, vice president of research at Hurwitz Consulting Group in Watertown, Mass. "In the early primitive stages of middleware, people were focusing on technical connectivity. As this space matures, people will focus on higher-level services and being able to manage middleware," he said.

Information Builders revamped Release 3 so it can hold up in performance-intensive environments, in which analysts said it has not done well. It is also playing up the warehousing capabilities of Release 3 with tools such as copy management and data propagation.

In addition, the company has shifted to a user-based pricing model that is mostly designed to attract new users. The new model makes it cheaper to license EDA than the old processor-based pricing for 64 users or less.

EDA-fying

Price breaks for Information Builders' EDA/SQL products*

EDA/SQL product	Old	New	Savings
CICS DB2 relational gateway	$51,900	$28,990	45%
IMS/DB nonrelational gateway	$101,950	$40,630	61%
Full-function server to IMS, DB2, VSAM	$191,362	$89,446	54%

*Pricing based on a 16-user LAN linked to an IBM ES/9000

User concerns

While some users said they expect to eventually implement some of the distributed data management functions, they are now concerned with more basic issues.

Larry Miller, manager of database administration at the business services computing technology center of Allied Signal, Inc. in Phoenix, said data warehousing with EDA is a down-the-road possibility.

But his more immediate concern is getting Release 3's IMS access facility, which will provide easier update capabilities to the IBM mainframe database management system.

"With the release we are on, it is a read-only IMS driver," Miller said. "So it is difficult to update IMS. As a large corporation, we have a large amount of IMS databases. There's a large requirement to access and update that data."

Million-dollar baby

Information Builders brought in about $227 million in revenue last year. EDA/SQL sales accounted for $30 million of that.

Provides protection

Caterpillar, Inc. in Peoria, Ill., is another EDA user pleased with the advanced components of Release 3, but it is currently involved with the fundamentals of opening up mainframe data to end users.

"The significance [of Release 3] to Caterpillar is that we are a large, traditional IMS shop," said Jerry Hosler, a systems manager in the corporate information services division at Caterpillar.

Hosler said the IMS access facility, which Caterpillar beta-tested, will help protect the company's IMS investment, which he characterized as "millions of dollars worth of logic and data." The facility will provide PC users with the ability to access and execute IMS transactions.

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New Products

Boole & Babbage, Inc. has announced ProSMS 3.3, an integrated suite of MVS software products that automate storage management.

According to the San Jose, Calif., company, ProSMS lets users select resources and includes a trace facility that displays how a function operates based on the parameter specifications. The StopX37/II module provides dynamic abend recovery and lets users simulate activity before implementing changes.

An EasyPool module provides simplified administration and detailed reporting, and the EasyHSM (hierarchical storage management) module lets users highlight critical messages.

Pricing starts at $37,900.

▶*Boole & Babbage*
(408) 526-3000

Unisys Corp. has announced the LP800 and LP1200 line matrix printers.

According to the Blue Bell, Pa., company, the printers support business applications in midrange data processing and distributed client/server print environments.

The printers feature disk-loadable, software-based operating systems and let users add enhancements when they become available.

Both printers produce characters in various sizes, pitch and densities with support for multinational character sets, bar-code printing and graphics emulation.

The LP800 costs $9,995, and the LP1200 costs $16,995.

▶*Unisys*
(215) 986-4011

Hasi, Inc. has introduced OnePrint, software that distributes print requests for host-based applications across LANs to LAN-accessible printers.

According to the Carrollton, Texas, company, OnePrint lets Novell, Inc. NetWare printers print IBM mainframe applications.

OnePrint accepts mainframe print jobs and converts them to ASCII data streams. They are sent to a print queue in a NetWare file sever where they are routed to the printer.

The product serves multiple hosts, protocols, LAN segments, file servers and printers. It provides central control, configuration and problem resolution.

OnePrint runs on a dedicated 486-based PC attached to a LAN via Token Ring and appears to the mainframe as a downstream node control unit with support for up to 32 printers.

Prices range from $3,600 to $22,400.

▶*Hasi*
(214) 386-2000

Baber Information Services, Inc. has announced Detectit, a security and audit product for the IBM AS/400.

According to the Irving, Texas, firm, Detectit detects unauthorized accesses, system violations and unauthorized changes and immediately notifies users.

The product is made up of five modules: Access Control provides additional access control functions; Menu and Program Control includes a menu generator; Network Control lets users control multiple AS/400s from one machine; Object Control detects changes in the computer; and Audit Control is a full-auditing facility.

Prices range from $1,350 to $21,600 per module.

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The Home Depot

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Their record growth rate also overwhelmed their old computer systems. So they picked HP 9000 Series 800 replicated servers and Informix's OnLine RDBMS to replace them. Now hundreds of these in-store processors, linked via satellite to multiple data centers, give Home Depot another competitive edge.

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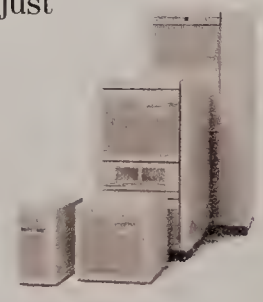

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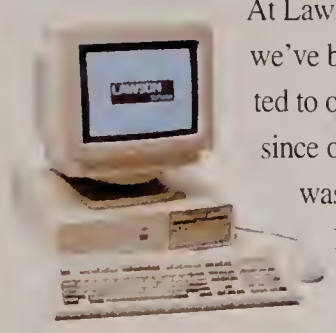
How to Unravel the Client/Server Mystique.

First, accept that there is no mystique. Rather, there are hordes of slightly frantic software companies content to have you believe that effective open system solutions remain elusive while they rush to understand, develop, and market their interpretation of client/server. Then there's Lawson Software.

An Open Systems Foundation



At Lawson Software, we've been committed to open systems since our company was founded in 1975. We've always believed that to be a valuable business partner, an applications provider must offer choices for business strategy development. So for us, client/server isn't a new phenomenon. Instead, it's the next logical step in our development. And it exists today – fully developed and fully functional – in the latest release of our enterprise-wide, cross-industry, world-class business application software.

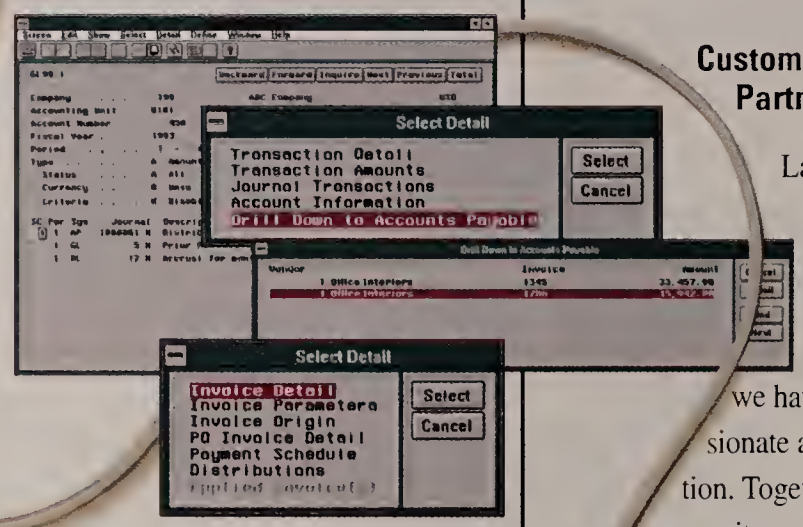
A True Client/Server Solution

The truth is, client/server takes on a special meaning for each individual business computing environment. That's why we've structured our client/server solution as a comprehensive 3-tier architecture, delivering you maximum flexibility in hardware, database and user interface. It's why Lawson's products run across platforms like the AS/400 as well as UNIX systems such as the RS/6000 and HP9000. And it's also why we feature seamless support for a variety of leading databases. In short, we offer options that allow you to make the decisions. Based on your existing hardware configurations and your plans for future development, you choose to place the components of client/server where they will deliver the greatest value and performance.

Optimized Information Management

Lawson's efficient use of technology leads to a system with the scalability demanded in today's changing world.

We incorporate the latest GUI technologies, creating a user-friendly environment that reduces training time. Individual users can manipulate windows, icons and tool bars to create a personal work environment that increases productivity. In addition,



Lawson has revolutionized the way users access information with our comprehensive "drill-around" capability: now a single click of the mouse allows transparent access to data from multiple applications and platforms. And finally, to truly maximize your options, Lawson has maintained the ability to interface our applications using character-based terminals.

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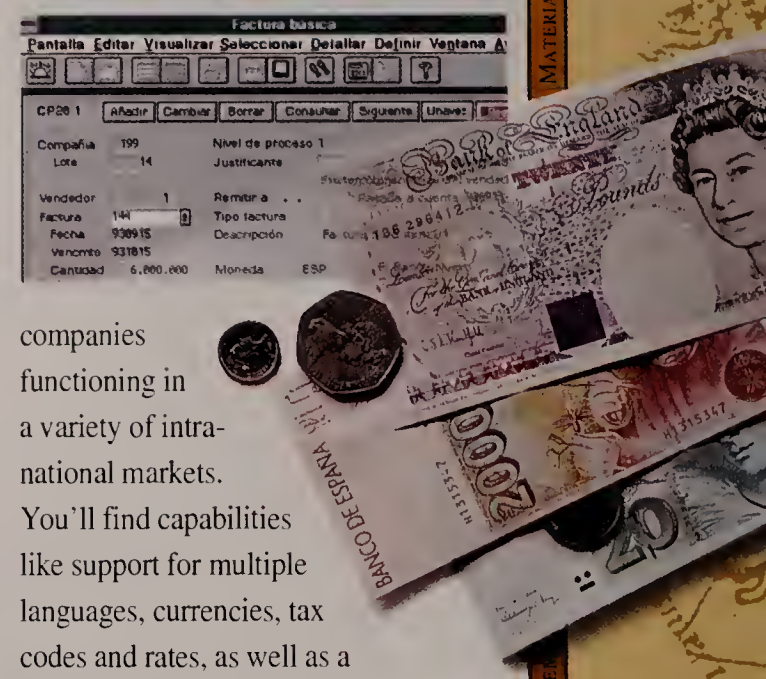

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Lawson Software has always been focused on leading edge technology. And we have always been passionate about client satisfaction. Together, these two commitments have resulted in truly flexible business solutions created with your needs in mind. We'd like the chance to demonstrate this to you. You'll see how – from our system architecture to our award winning client services – Lawson Software really does unravel the client/server mystique.

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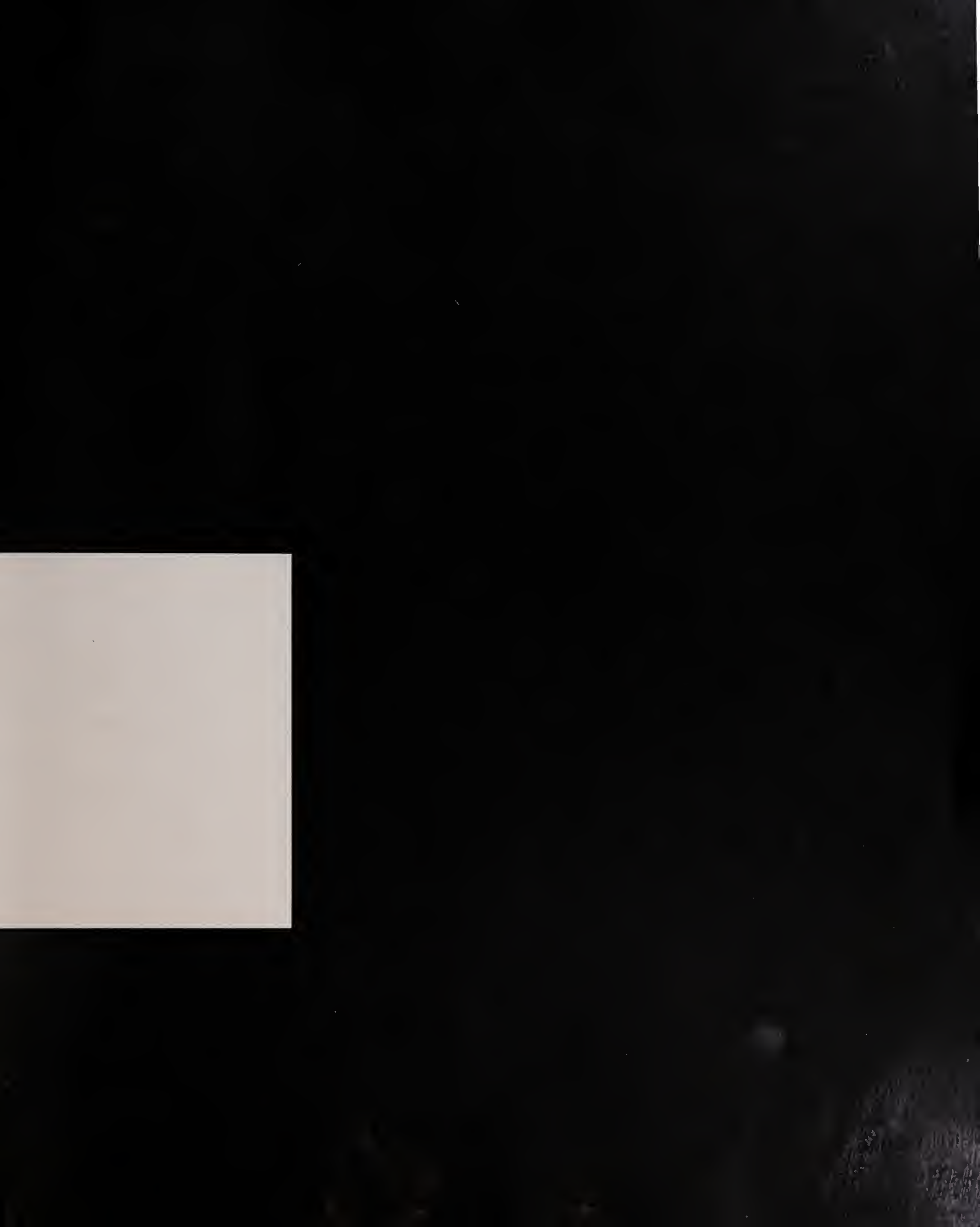

Commentary

James Connolly

Object tools can build a bridge

Survey time: Will everyone who thinks it's good for developers to stay in touch with their users please raise their hand? Wow — move over Mom and apple pie. The problem is that few companies are really putting this into practice — although many think they are.

Developers are soliciting input from their end users on application design, and users are offering feedback on prototypes and test versions throughout the development cycle. Everyone's doing that, right? If you answered yes on that one, I have a couple of bridges for sale, only slightly used.

If you ask many IS shops whether they really do IS/user pairing you hear, "We try, but . . . our users are on a different campus. . . . Nobody has the time. . . . We're not organized that way." The bottom line is that IS too often just gets a requirements list from the user, then, maybe, shows the user some sort of prototype before it rolls out a pilot project.

Winning team

A whole lot of people are missing a great opportunity. Even if object-oriented development tools aren't the silver bullet that vendors claim, they do provide a vehicle that can bring users and IS together. Call it joint application development (JAD) or anything else — pairing those two groups can provide only benefits.

When IS developers use object-oriented tools to show their customers how their application will look, feel and work while it's a work in progress, the user isn't just providing feedback — that was the old prototyping approach of the 1980s — the user is participating in the application's development.

But the tools are only the vehicle. We're missing the organization that encourages — demands — JAD. That organization has to produce a new mind-set. It must look at what has worked or not worked in the 10 years since companies started assigning developers to business units. Executives and consultants have written a million research papers, and we've given the idea names such as decentralization.

Far too many companies have viewed decentralization as a means of shedding responsibility or giving departments a bunch of PCs, a server and a LAN. The hardware went out with this license, "Go ahead, build a few Visual Basic apps for yourself. Then you'll come begging IS for help when you want to add security features and manage the backup."

It sounds as if egos may be the biggest potholes in the road to distributed computing. Who wins when renegade users develop their own apps and then call on IS to fix them, or when IS develops what it thinks the user wants and then goes back for another six months of work when it discovers what the user really wants?

Even if your company doesn't appoint a great and powerful wizard of JAD, you have to look at what object-oriented tools can do to break down the IS/user barrier. If you back those tools with a mind-set, workflow and reward structure that ensure user participation in the development process, there can be no downside.

Connolly is *Computerworld*'s sections editor. He can be reached by MCI Mail at 597-1804.

Informix looks to NewEra

Vendor plans piecemeal rollout

By Kim S. Nash
TAMPA, FLA.

As expected, Informix Software, Inc. unveiled a long-awaited object-oriented development tool at its annual user group show here last week. But the product, called NewEra, will be released in phases, with some features not expected to appear until this time next year.

NewEra builds on the existing Informix-4GL fourth-generation language by adding graphical and object capabilities, including support for class libraries and a new programming language. The goal is to best client/server development vendors such as Gupta Corp. and Powersoft Corp.

Indeed, unlike Gupta and Powersoft, Informix's NewEra is part of a second generation of client/server tools that lets application builders add users and functionality to client/server applications, said Judith Hurwitz, president of Hurwitz Consulting Group in Watertown, Mass. In other words, she added, NewEra allows developers to scale up these applications.

The biggest difference between the first and second waves of client/server tools, she said, is that the latter will let developers split up, or partition, application logic. For example, programs built with Powersoft's PowerBuilder run solely on Windows PCs. Applications where all logic is stuck on the desktop produce fat clients, she explained.

Thus, deploying even a simple PowerBuilder application to a few hundred users could mean a big desktop hardware bill, Hurwitz noted.

The next generation of client/server development, exemplified by new products from Informix, Dynasty and Forte, let programmers designate parts of their code for servers and other parts for clients, which makes adding users and other administrative tasks easier, she said. But Informix will not support the ability to split application logic like that for another year, according to the ship schedule for NewEra.

Keeps on rolling

Meanwhile, the rest of NewEra's phased rollout looks like this:

- This month, several modules of NewEra — Application Builder, ViewPoint Pro, a graphical report writer, and drivers for Oracle Corp., Sybase, Inc. and other Open Database Connectivity-supported databases — are shipping under Windows. Informix and Microsoft Corp. recently signed a reseller deal whereby Informix and its partners will bundle Windows and Windows NT with Informix applications and databases.
- During the fourth quarter, NewEra and its accompanying tools are due to be released for the Unix Motif interface.
- Mid-1995 is the target date for full repository capabilities as well as the ability to partition applications in NewEra 2.0.

NewEra 1.0 will work only with class libraries developed specifically for it, but integration with Smalltalk and IBM object products is planned, said Tony Radoni, director of product management.

While no corporate information systems developers have tested NewEra yet, two third-party software makers have begun porting applications from Informix's character-based 4GL to NewEra.

An estimated 75% of code in Fourgen Software, Inc.'s software can be migrated from character-based Informix-4GL to NewEra. Concepts Dynamic, Inc., a financial software maker in Schaumburg, Ill., also plans to recreate its products under NewEra.

Per-user prices

Pricing for NewEra adheres to Informix's per-user model:

- **A development license** is $4,495 per client.
- **The class library** sells for $495 per client.

IBM pursues SOM applications boost

By Melinda-Carol Ballou

The availability of application development tools and more general applications for IBM's System Object Model (SOM) is critical if IBM's technology is to succeed, according to some industry analysts. So far, IBM is gaining ground but still has a ways to go.

In fact, an array of tools support is expected to materialize by year's end. Tools companies that are shipping or are likely to ship support for SOM before the end of the year include Borland International, Inc., Symantec Corp., Powersoft Corp.'s Watcom International subsidiary, Metaware, Inc., Easel Corp., ParcPlace Systems, Inc., Intelligent Environments, Inc. and Digitalk, Inc. Also, IBM's VisualAge, SOMobjects Developer Toolkit and C Set ++ tools will offer or already offer support for SOM.

IBM is gaining momentum for SOM, analysts said. "It's a very strong technology for distributing applications," said Judith Hurwitz, president of Hurwitz Consulting Group, a Watertown, Mass., consulting firm. "And the tools vendors are starting to get behind it." SOM and Distributed SOM are integral to Component Integration Laboratories' OpenDoc and IBM/Hewlett-Packard Co.'s Taligent operating system efforts.

Other analysts, however, were less sanguine. If some cash-strapped third-party vendors need to choose one object standard to support, "it is likely to be OLE," said Richard Finkelstein, president of Performance Computing, a Chicago consulting firm. "IBM is spending practically nothing in terms of developing applications for SOM or purchasing them."

Fewer than 40 applications are slated to ship for SOM, while Microsoft's Object Linking and Embedding has about 120 applications shipping already, indicating the long road IBM must travel before it meets the Microsoft challenge, analysts noted.

Allstate pulls together to redevelop billing process

Firm finds strength in unity

By Melinda-Carol Ballou

When Allstate Insurance Co. decided to revamp its billing system for Allstate Property & Casualty Co. two years ago, the information systems department decided the only way to create a successful, nationwide application would be to pull in business representatives from other key areas of the company.

"The goal was very simple. We felt that we were confusing our customers with the bills we were delivering, and the goal was to fix that," said Ken Schlatter, a senior division director at Property & Casualty's information systems.

Schlatter approached upper management with a proposal that such representatives be assigned to the application development team on a full-time basis for the duration of the project — a commitment of about two years. An earlier attempt to modify this application had been unsuccessful, and Schlatter made the case that this would be the way to "do it right."

Team members were made available from departments including sales, underwriting, legal, systems, operations and accounting, among others. Most of these people saw the two-year project through to the end.

"With typical application development [projects] you just do it. It's like someone throwing a letter over the wall and then going away," Schlatter said. "I wanted the people who make the decisions to be right there with me. I had a captive audience who was very interested in making this work."

One for all

Bringing together a disparate group and coordinating its efforts was not easy. "It was uncomfortable at first," said Lyn Scrine, a senior marketing project manager with expertise in customer relations and insurance forms design. "Then we realized that whatever decisions were made were team decisions. Before, if you made a decision it came directly back to you [individually]. But we had a vested interest as a group to make the project succeed."

After the group began functioning as a team, the traditional barriers and boundaries began to fall away, according to several members from Property & Casualty's business side.

"It was a very revealing experience for me," said Peter Brooks, director of operation support. "The difference in working with a team is that you become much closer to one another. The normal formality of business goes away, and you become like a family, and it's in that atmosphere that you get the most work done."

Once the representatives of the various departments were chosen and the team was in place, the group used Information Engineering Methodology (IEM), a structured application development methodology from James Martin, Inc. to help design the software. A consultant from James Martin was also a member of the 12-person team.

Staying focused

The team coordinated this design work with customer focus groups and a company research center, analyzing both the effects on clients and the economic consequences of decisions being made. The team spent six months designing the application. Data was stored in KnowledgeWare, Inc.'s Application Development Workbench (ADW) repository. The code for the pilot project was then generated within 90 days using ADW, Schlatter said.

Brooks and other business representatives said they found using IEM uncomfortable because "it's very structured, and you have to make difficult decisions." However, it provided the team with discipline, he added. "It kept us focused and kept us away from mere opinions about how things ought to be," Brooks said.

The result was an application delivered on time and slightly under budget. The earlier application combined billing with insurance policies so that a customer received a policy statement every time he received a bill. The new application separates out billing and provides customers with regular, monthly bills.

When customers call with questions, Allstate agents now can eall up on-screen a copy of the form customers are looking at. This allows the agents to "better interpret" customers' questions, said Frank Daily, a sales manager who joined the project in its final stages. "They are also able now to make their own decisions about how to handle an account without the intervention of a third party," he added.

Property & Casualty's Ken Schlatter *made the case for a team approach*

ON SITE

Allstate Property & Casualty Co.
Northbrook, Ill.

Goal: To simplify a cumbersome and confusing customer billing process and better coordinate business requirements with the development cycle.

Technology: James Martin, Inc.'s Information Engineering Methodology; KnowledgeWare, Inc.'s Application Development Workbench; and Applied Business Technologies Corp.'s Project Workbench.

Result: The customer billing application shipped on schedule and under budget.

Wise investment

The multimillion-dollar revamping of Allstate Property & Casualty's billing application is expected to pay for itself over three years as a result of increased efficiency in the billing process. The application has now shipped to five states and will be available nationwide by next March.

Teamwork tips

The following are some tips from Allstate professionals:

On building successful teams:

- Choose "cross-cultural" team members from a range of departments so critical business needs and viewpoints are fully represented.
- Make sure those team members can make decisions for their department without constantly getting permission.
- Get your team and keep it together full time for the duration of the project.
- Structure meetings carefully but hear everyone out, regardless of rank.

On getting commitment, support and resources from upper management:

- Get management to realize the critical nature of the project.
- Keep management continually informed throughout the process so there are no surprises.

Briefs

Japanese firms show Progress

Progress Software Corp. is joining with two Japanese firms — **Nissho Iwai Corp.**, a trading company, and **Ines Corp.**, a data service company — to create a joint venture targeting the Japanese market. The companies plan to incorporate in Japan during the third quarter as Progress Software KK. They will join other Progress subsidiaries in the Pacific Rim that market and sell Progress in the region. Nissho Iwai will act as the sole distributor for Progress in Japan until the commercial operations of Progress Software KK begin.

Expersoft crosses the 'pond'

Expersoft Corp. announced the formation of a joint venture that will target the emerging object market in the UK. Called **Expersoft Ltd.**, the new company will sell and support Expersoft's XShell 3.0, the company's distributed object request broker, to large-scale environments. XShell integrates support for both the Object Management Group's Common Object Request Broker Architecture and Microsoft Corp.'s Object Linking and Embedding. Existing customers include BT and Andersen Consulting.

Client/server fuels Cognos

Cognos, Inc. last month announced fiscal results for its first fiscal quarter, ended May 31. Revenue reached $1.9 million Canadian, up 6% over the same period for the previous year. Company officials attributed the growth to their client/server products, for which revenue tripled during the same period last year, they said. On the other hand, revenue for traditional midrange platforms from Hewlett-Packard Co., Digital Equipment Corp. and Data General Corp. declined by about 8%.

Unisys offers 4GL for Unix

Unisys Corp. announced the availability of its Linc fourth-generation language software on Sequent Computer Systems, Inc.'s Symmetry and Sun Microsystems, Inc.'s SPARC Unix-based servers. Prices for the Windows-based Linc development environment start at $12,500 per developer. Runtime versions supporting from one to eight users start at $2,400, plus $300 for each additional user. The software is available immediately on Sequent Symmetry systems and will be available on Sun systems in the third quarter.

One interface

The **Object Database Management Group** (ODMG), a consortium of object database vendors, has announced a new version of its interface standard. ODMG-93 Release 1.1 features better C++ efficiency and improves the grammar of the object definition language in the interface. The ODMG hopes to give vendors one programming interface and thus speed to market more object-oriented applications that can work with one another, the group said.

Nobody's ever going to get fired for buying Cyrix, either.

B4 THE WALL STREET JOURNAL FRIDAY, APRIL 15, 1994

IBM Signs Production Pact With Cyrix

By Bart Ziegler
Staff Reporter of The Wall Street Journal

NEW YORK — International Business Machines Corp. took aim at Intel Corp.'s lucrative Pentium chip market yesterday, signing a major production pact with upstart chip maker Cyrix Corp.

The pact could offer the first unlicensed alternative to Intel's top-of-the-line Pentium at a time when Intel has fought aggressively in court and in the market to retain its control over newer-generation chips. Only two months ago IBM passed up the right to license the Pentium design from Intel, but now has embraced scrappy rival that

The Cyrix chips, which IBM won't begin producing until year end, mimick Intel's Pentium workings without illegally copying the chip's precise circuitry, the company maintains. Intel, in suits against other clone makers, has countered that a rival chip can violate Intel patents even without directly copying Intel designs.

Cyrix Suit

Indeed, IBM may yet be pulled into the Cyrix suit. In that Intel case, a federal judge in Texas is expected to rule this summer on whether

for Cyrix

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A FEW WORDS REGARDING THE FUTURE OF MICROSOFT SQL SERVER

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There have been more than a few words on how client-server computing has grown, matured, and changed. Take our word for it, we've been there from the beginning.

Making the right choices in the move to distributed client-server computing is never easy. Today's investment in strategic operating systems, networking, and database technology will lay the foundation for the future.

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For seven years, thousands of organizations have invested in Microsoft® SQL Server as a strategic database platform. In the process, they've helped Microsoft to become the 2nd largest vendor of database products in the world.* The result? Over 3 million users are gaining business benefits.

But it's the industry support that really says the most. More than 5,300 Solution Providers and ISVs (Independent Software Vendors) have already aligned with Microsoft to deliver consulting, training, systems integration, and value-added business solutions that build on Microsoft's open foundation for distributed computing.

"Microsoft has proven itself to be a business technology leader; this is just one of the reasons we partner with them."
—Ron Brittian, Senior Vice President, Texas Instruments, Inc.—

And for good reason. Our newest release of SQL Server for Windows NT™ has been named "Client-Server Product of the Year" by *InfoWorld*, and one of the "10 Best Products of 1993" by *PC Week* Labs. And, Microsoft's engineers are justifiably proud of this.

"Microsoft SQL Server is a strategic platform in our EDA/SQL middleware solution for bringing together all enterprise data."
—Gerry D. Cohen, President, Information Builders Inc.—

But this is just the beginning. Microsoft has been hard at work with our strategic partners and our customers to help shape the future of SQL Server. To challenge the boundaries of technology. To build on your investments.

"Microsoft's clear vision for the future has been a valuable guide in developing our state-of-the-art information systems."
—Paul Brenner, Vice President of Information Technology, Baxter Healthcare Corporation—

Soon, we will deliver the next generation Microsoft SQL Server family. Designed to address the most demanding customer requirements for manageable, distributed systems: replication, enterprisewide systems management, standards compliance, very large database support, object integration, Visual Basic® for Applications automation, and much more. In addition, it builds on an open client-server architecture that easily integrates with existing systems, runs across the widest variety of hardware platforms, and brings the benefits of computing with the Windows™ operating system to a new generation of business solutions.

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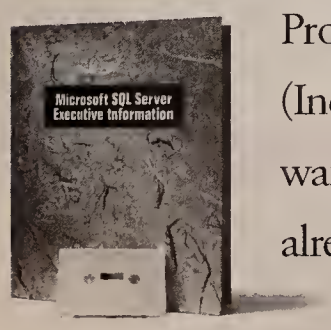

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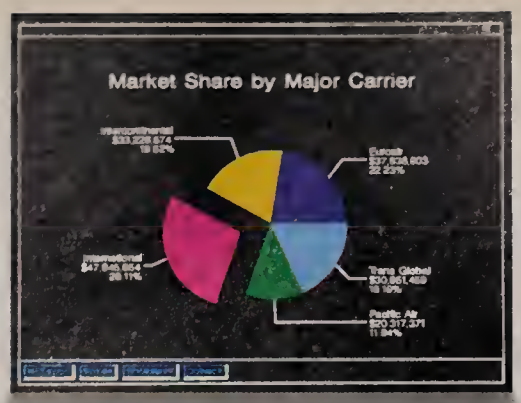

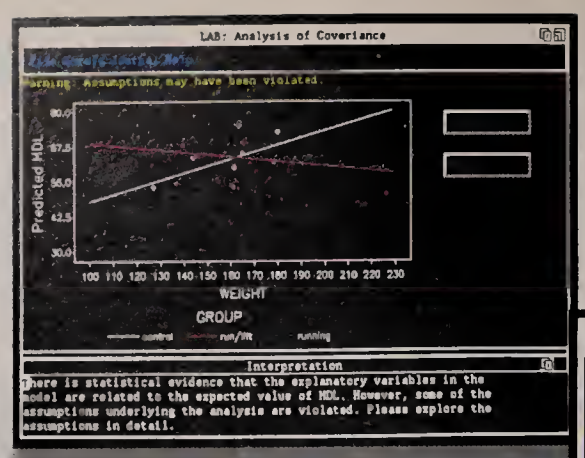

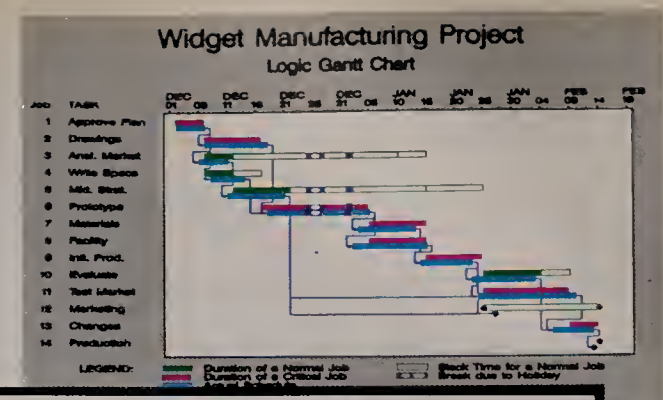

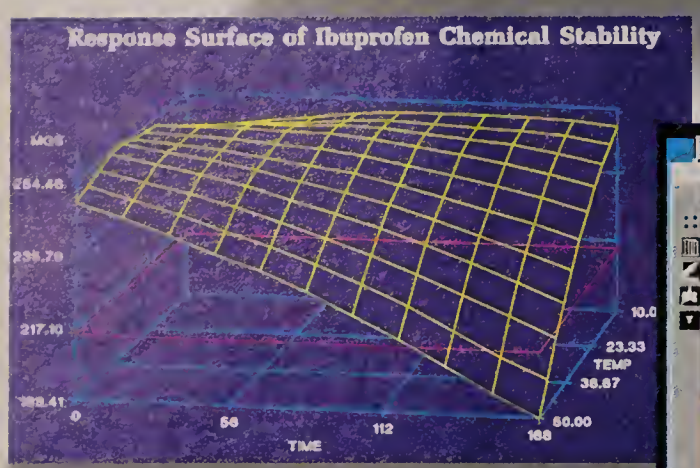

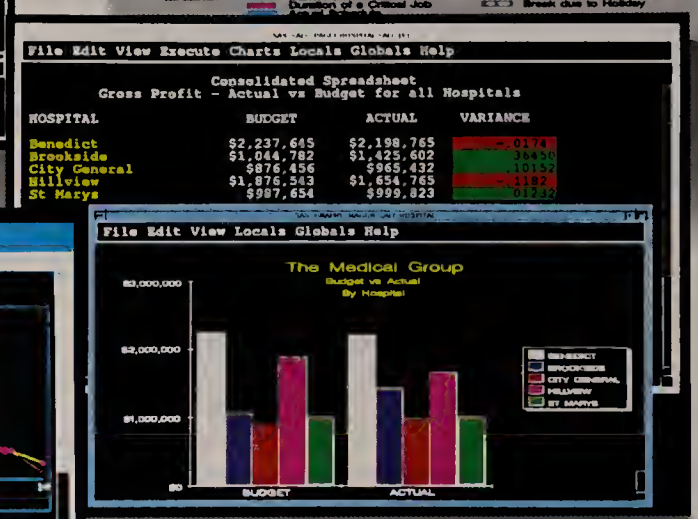

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INSIDE

OLD MACDONALD HAD A NEWTON...

...NOT TO MENTION A LAPTOP, A SATELLITE DISH AND WAN LINKS.

That's because Monsanto, Deere and other agricultural suppliers are helping farmers stay profitable by providing advanced technology.

BOB BARRETT

Monsanto's Mark Vanacht: 'We decided we needed to act as a catalyst'

By Alice LaPlante

The first half of the year has been business as usual for the agricultural industry. Translation: It's been a hell of a ride.

The worst drought in almost half a century hit West Texas, ravaging the winter harvest. The Midwest was soaked with a series of rainstorms that panicked farmers still reeling from last year's floods. And livestock-futures prices plummeted in April.

How does $7.7 billion multinational conglomerate Monsanto Co. — which derives $1.7 billion of its annual revenue from its line of agricultural products — respond to all this? Easy. It enters the commercial PC software marketplace.

To ensure steady markets for their own products, agricultural equipment and chemical manufacturers such as Monsanto and Deere & Co. are jumping into software development and technology alliances with their customers down on the farm to help the farmers avoid an economic squeeze play.

Monsanto is concerned that its core

Old MacDonald, *page 84*

Precision planting

There are three critical links to the success of Deere's precision farming project:

Mapping accurate sections within a field for analysis. Increasingly, this will be done by satellite receivers mounted on Deere farm equipment that communicate with global positioning satellites and create digital maps of a particular area.

Prescribing exact amounts of chemicals, fertilizers and seed. This will be done by onboard processors, based on an analysis of the soil and yield potential of each field section, to provide a precise blueprint for preparing the field for planting.

Communicating this complex field data back to traditional farm record-keeping systems. This data is used to track the financial outcome of experimenting with these new farming techniques.

Old MacDonald

CONTINUED FROM PAGE 83

customer base — the U.S. farmer — be financially healthy enough to keep buying its line of agricultural products. So the company is developing software to help farmers be better at what they do.

Researchers at Monsanto's St. Louis-based agricultural division have spent the past 18 months developing crop management software to help farmers track chemical and fertilizer use down to infinitesimally exact levels.

The digital "farmer's assistant" software runs on an Apple Computer, Inc. Newton message pad and will link this all-important information to historical databases containing yield and profitability calculations from previous crop years.

Further down the road, the software will allow farmers to place electronic orders for new supplies while sitting in the cab of a tractor or pickup truck.

Monsanto hopes this software will boost the efficiency — and therefore profitability — of its customer base. And while production and marketing of the product is being passed off to a newly formed company, Monsanto expects to reap enormous indirect benefits. Which is, of course, the point.

"Monsanto doesn't want to become a software developer, but at the same time, if we don't help farmers with their [information technology] efforts, the agricultural industry could fall several valuable years behind," says Mark Vanacht, a member of the Monsanto team that developed the software.

Because "traditional hardware and software companies have yet to view agriculture as a prime target," Vanacht says, "we decided we needed to act as a catalyst."

Monsanto is not alone in feeling this urgency.

Why Old MacDonald needs the help

The average income for farmers has dropped significantly since the late 1980s, whereas total cash receipts and farm production expenses have risen

	1988	1993	% change
Total cash receipts	$166B	$187B	Increase of 12.6%
Farm production expenses	$137B	$151B	Increase of 10.2%
	1988	**1994***	**% change**
Average farmer's income	$5,796	$4,882	Decrease of 12.8%

*Estimated

Source: U.S. Department of Agriculture

Precision is the key word

Earlier this year, Deere, the Moline, Ill.-based heavy equipment manufacturer, created its precision farming group — a small "skunkworks" operation (a creative brainstorming group set off to develop ideas undisturbed) — that hopes to develop new applications for crop and livestock inventory and controls.

"Precision farming" is a relatively new concept in agriculture in which farmers calculate and apply varying amounts of "inputs" — fertilizers, chemicals, moisture, seeds, etc. — to match the specific needs of different types of soil in a given field.

The process depends on three technological links, according to John Kubik, manager of Deere's precision farming group: accurately mapping the field, properly analyzing the soil and yield in each portion of it and comparing the information against more traditional farm record-keeping systems such as accounting, inventory and cash-management spreadsheets.

"So farm managers will eventually want field software to link with farm record-keeping systems, tax accounting systems and the software that helps them produce documentation for environmental compliance," Kubik says.

Like Monsanto, Deere is concerned that its core customer base be financially healthy. And Kubik says Deere management has two major worries it hopes to address with its precision farming group.

First, stricter federal regulations about soil conservation, tillage practices and use of chemicals and pesticides require time-consuming record-keeping and report-writing activities of farmers. Time spent on paperwork is time not spent in the field — and more such federally mandated requirements are expected to be imposed in the near future, Kubik says.

Second, economic pressures resulting from reduced government subsidies, fierce price competition among large commercial farming conglomerates and a string of unprecedented natural disasters mean farmers are urgently looking for ways to reduce the cost of operations while increasing their overall yields.

Kubik's group has been charged with exploring the use of computer technology to aid Deere's customers in ways not traditionally the domain of the heavy equipment manufacturer, and at an unknown cost to farmers.

Farm aid

This type of intervention by Deere and Monsanto into the technological life of the agricultural community is a break from past practices. Most farming software has traditionally been marketed by small independent firms and designed to stand alone, chugging away at accounting, inventory management or other farm functions without having to interact or share data with other systems.

"The 120,000 farmers that produce 80% of the country's agricultural goods don't represent a particularly large market to a Microsoft or IBM," Vanacht explains.

This is changing, however, because of the involvement of major agricultural vendors, which are actively seeking partnerships with one another and with fledgling software developers in order to promote greater agricultural productivity.

There is Monsanto's as-yet-unannounced consortium that includes other major agricultural firms, which will market the New-

Sowing with Silicon

Major agricultural suppliers are developing software applications that will help farmers in the following areas:

- **The transmission of up-to-the-second commodity pricing and financial markets data to help plan the timing and size of harvest yields.**
- **A more exact tracking system for feed or seed mixtures used to improve future yields and/or breeding activities at the lowest possible cost.**
- **Improved retailer inventory replenishment through communications links between traditional farm accounting/record-keeping management programs and agricultural dealers/suppliers.**

ton system. And Deere has signed a partnership with Agris Corp., an agricultural software specialist based in Roswell, Ga., to make sure its technology developments can be incorporated into other farming applications.

"The agriculture industry is growing to be like other industries in that it is increasingly service-oriented," says Brandon Mitchell, sales and marketing coordinator at Agris.

Thus a fertilizer dealer who can call up a customer's purchasing history and electronically calculate the optimal chemical and seed mixes based on past experiences — as well as automatically generate the required reports for the Environmental Protection Agency and U.S. Department of Agriculture associated with use of certain chemicals — is going to win more customers than an agricultural supplier still doing things the traditional way, Mitchell says.

Power to the people

The next step is not so easy — providing electronic links between farmers and suppliers so that data such as inventory levels and raw materials orders can be transmitted easily between their computer systems.

The reason: rural America has yet to install the telecommunications infrastructure to make high-volume data transmissions affordable for many farmers.

"These are not areas that have the same access to the data superhighway as metropolitan centers," says Art Hussey, director of computer services at the College of Agriculture at Pennsylvania State University, which is actively promoting technology use among regional agricultural concerns.

"A relatively small number of farmers are going off the farm for information," Hussey says. "Larger operations — those involving more than 1,000 acres — might have subscriptions to some sort of data service."

Yet few are doing interactive computing, he says, primarily because of communications infrastructure and cost issues.

That view is shared by Kirk Smith, director of agricultural computer networks at Purdue University's Cooperative Extension Service in West Lafayette, Ind.

"There's very little [telecommunications] infrastructure in place in rural Indiana." Phone lines aren't terribly good even for minimal dial-up access, let alone broadband network services that many of today's farmers are beginning to demand, he says.

Despite these weaknesses in the rural telecommunications infrastructure, many promising projects are already under way.

Farmland Foods, Inc., a Kansas City, Mo., pork processing cooperative, is well on its way to developing electronic relationships with its suppliers — hog breeders throughout the Midwest.

Both hog producers and Farmland recognized the need to share "yield" information about the quality of the different cuts of meat when an animal is slaughtered. For example, if a particular hog breeder is supplying animals containing a high fat content, "we'll be able to pinpoint that and let them know. We might recommend a different type of genetic breed or nutritional supplement for them to use," says Deryl Roberts, director of information services at Farmland.

A year ago, Farmland completely rewrote its host IBM AS/400 software in order to track the yields of its various hog breeders more precisely. All Farmland facilities can access sophisticated reports about the quality of stock provided by individual hog producers by linking the database into its 450-node Novell, Inc. NetWare-based wide-area network.

In the near future, hog breeders will be able to dial in to the Farmland WAN from remote PCs and get detailed reports that will help them track the quality of their hogs, as well as compare end yields with industry standards.

Speedy deal-making

This two-way communication will play an important role for companies such as Monsanto and Deere — as well as purchasers of agricultural goods such as Cargill, Inc. — in their efforts to help farmers help themselves.

"Farmers are in the information business. It only makes sense that the information will eventually flow both ways," says Reuben Lantto, director of telecommunications at Cargill, a worldwide processor, transporter and reseller of agricultural commodities based in Minneapolis.

"Monsanto doesn't want to become a software developer, but at the same time, if we don't help farmers with their [information technology] efforts, the agricultural industry could fall several valuable years behind."

Mark Vanacht, a member of Monsanto's software development team

Traditionally, deals between farmers and grain handlers such as Cargill were handled over the phone, or "they'd stop in at our local elevator when they were in town," Lantto says. Once market data became available via satellite — through services such as Data Transmission Network Corp.'s (see story below) — the time it took to cut a deal between Cargill and farmers was cut dramatically.

"Believe me, today's farmers are very sophisticated at keeping on top of the latest commodities and futures prices," Lantto says. Now it's only a matter of time before the transaction itself will be completed electronically, he says.

And there will be other advantages to a two-way flow of data. For example, the federal government provides periodic crop reports — kept securely under wraps until official release dates — that provide the latest information on the expected production of various crops, which in turn affect grain markets, commodities prices and futures.

Cargill makes its own predictions, scouting rural America for evidence of the quality and quantity of upcoming harvests. It usually does this "by driving around or talking to the farmer when they come to the elevator to buy fertilizer or chemicals," says Lantto, who foresees a more efficient, and mutually beneficial, trade of information between farmers and Cargill in the foreseeable future.

How soon that happens remains to be seen. After all, in agriculture a significant gap exists between the haves and the have-nots.

According to Vanacht, the majority of farm production is done by a small percent of the farming community: 120,000 farming operations produce approximately 80% of all output. While he agrees that these farmers tend to be highly sophisticated about the use of computer technology, many of the remaining hundreds of thousands of U.S. farmers are just getting up to speed on basic PC skills, Vanacht says.

"It's not a matter of the technology so much as the culture," explains Larry Brunette, vice president of sales at Gross & Associates, a Savoy, Ill.-based maker of distribution software for grain merchandisers.

"Smaller farmers are beginning to understand how computers will help them become more efficient. But the industry as a whole has been significantly behind," Mitchell agrees.

The relative isolation of many rural communities makes the leap to technology even more frightening than for urban users.

"It's frustrating enough when you need to modify your CONFIG.SYS file, and you need to walk down the hall to find the company's computer expert," Hussey says. "Imagine if there's no one around to help. These things are not yet at the plug-and-play stage." ■

LaPlante is a free-lance writer in Woodside, Calif.

SOYBEANS BY SATELLITE

When U.S. farmers want a dependable source of information on crop rotation tips, fertilizer concentrations or weather reports, they can get it by looking to the heavens. Satellite links have now become a primary information tool on the farm.

Omaha-based Data Transmission Network (DTN) was founded 10 years ago to provide farmers with weather reports, commodity grain prices and other constantly changing data of interest to the agricultural industry via satellite links.

Currently, DTN services more than 77,000 subscribers throughout the agriculture, financial markets and energy industries with satellite broadcasts. (Approximately 60,000 of its subscribers remain within the agriculture sector.)

Information is refreshed continually and uploaded to the satellite from DTN's headquarters; subscribers pay relatively modest monthly fees — ranging from $40 to $80 for agricultural customers — for DTN's data services. This fee includes the use of a satellite dish for receiving the transmissions, as well as a dedicated microprocessor-based terminal and monitor for viewing current and historical data.

The next step: Making DTN interactive, says Eric Miller, director of public relations at DTN. The firm is about to announce a service for its energy subscribers in which Houston-based energy giant Enron Corp. will use DTN's broadcast capabilities to communicate pricing and availability of natural gas products to its customers around the globe. Enron customers will be able to view up-to-the minute inventories and prices from their DTN monitor and either call or fax orders into a central clearinghouse for immediate fulfillment.

"We haven't gotten to the point where our subscribers can bounce signals back to us via satellite," Miller says. But it's the first step toward two-way electronic communication between customers and suppliers — something that undoubtedly can be applied to agriculture — that points the way toward greater economic synergy, Miller says. — *Alice LaPlante*

Intelligence Files

Re-engineering: All the rage

Re-engineering is clearly the rage in both North America and Europe, but it is being used too indiscriminately. The companies that have had the greatest success are those with the most aggressive goals, strong project management and strong commitment by senior management.

Those are the findings of the recent "State of Re-engineering" study released by CSC Index, Inc. in Cambridge, Mass., which examined re-engineering attempts and results in more than 600 countries in North America and Europe. Most of the companies surveyed had revenues in excess of $500 million.

The study found that most companies have not realized a dramatic payback. However, re-engineering has neither been a failure nor the source of layoffs on a widescale basis.

CSC Index President David G. Robinson says the promise of big change from re-engineering "has led to indiscriminate use of the technique. There appear to be too many initiatives per company without a real strategic context and without the big goals necessary to truly alter a business process or unit."

However, Robinson says he expects this "frenzy of re-engineering activity will soon make way for a more judicious application of the concept. Because of the time, resources and energy re-engineering extracts from an organization, it is not a tool to be used indiscriminately."

Top 6 IS re-engineering goals

1. Increase productivity
2. Improve customer satisfaction
3. Improve quality
4. Reduce costs
5. Reduce cycle time
6. Increase revenue

Base: 600 North American and European companies

Source: CSC Index, Inc.'s "State of Re-engineering" report

Two-thirds of the 497 North American companies and three quarters of the 124 European companies surveyed are now re-engineering one or more processes, and many have three or more initiatives in progress. Most reported benefits in one of the following areas: reduced cost or cycle time, increased revenue or productivity, and quality and customer satisfaction. But the returns were generally not dramatic. Only 17% reported strong results, 16% reported equal or better than average results and 42% reported average to marginal results.

The study also found that jobs emerging in a re-engineered workplace are multidimensional and require more skills. Teamwork and the ability to learn skills are more important as a result.

Top-level companies that reported the greatest success with re-engineering were those whose IS staff worked well in teams. Also, companies did well if their employees trusted management, felt empowered to make decisions, believed they were paid for performance, shared information and took risks.

A new view of the 'productivity paradox'

Early results are in on a study of 25 leading companies in the U.S. and Europe on the so-called "productivity paradox." This term refers to the findings of some studies that investments in information technology have either not increased productivity or profitability or that any gains have been offset by inefficiencies somewhere else. The study was conducted last year by Andersen Consulting and PIMS Europe, a research and consulting firm in London. PIMS stands for Profit Impact of Marketing Strategy.

Among the results were the following:

- **Business value is affected** not by total information technology spending but by discretionary investments aligned with business goals, such as developing new technology capabilities, upgrading software and expanding information technology infrastructure.
- **Companies that targeted** higher levels of discretionary spending on critical business objectives saw higher levels of productivity.
- **It pays to bring in IS early** in the re-engineering process: Firms that most extensively integrated re-engineering and information technology had 30% higher productivity levels.
- **While productivity declined** on average between 1990 and 1992 in the 25 companies sampled, those firms that invested in change management initiatives aimed at workflow and task redesign raised productivity.

With the first phase of the study now out, Andersen and PIMS Europe will continue their research with the same companies to see how the effect of information technology investments change over time. They will also expand the study to include new companies. Companies that want to be a part of the study can contact Ben Porter at Andersen Consulting at (617) 330-4913.

Japan and re-engineering

How does Japan stack up against corporate America in the race to re-engineer?

Fewer Japanese companies are currently undergoing re-engineering efforts, but there is more interest in pursuing re-engineering on the other side of the Pacific, according to a survey conducted by International Data Corp. (IDC) in Framingham, Mass.

The IDC survey, which primarily surveyed companies with revenues of less than $500 million, uncovered far less re-engineering activity than the CSC Index study (see above).

IDC found that 16.2% of U.S. companies are currently undergoing business process re-engineering, compared with 6.9% of Japanese firms. However, 29.8% of Japanese respondents indicated that they are either planning a re-engineering project or would like to pursue re-engineering, compared with only 12.5% of comparable U.S. firms.

Japanese manufacturers expressed the most interest in re-engineering: 48.6% of Japanese discrete manufacturers and 43% of process manufacturers said they were either undergoing, planning or considering re-engineering. This compares with 40.4% and 33.3% of comparable U.S. manufacturers.

The study consisted of 785 Japanese companies and 751 U.S. firms.

Tracking down deadbeats

CD-ROMs are playing a growing role in helping collection agencies track down "deadbeats" trying to cover their tracks.

"The hottest thing going is CD-ROM," says Ron Mendell, a National Association for Legal Investigators member who works at the law offices of Edward W. Berliner in Austin, Texas.

Many collection companies are finding they can always get their man (or woman) by turning to CD-ROMs to access national telephone directory listings. Two such CD-ROM packages are available from Tiger Software in Miami. The first, Direct Phone, is a national master white pages telephone directory with 72 million listings ($99). The second, Select Phone, combines the white pages and yellow pages for a combined 80 million listings ($199). Each is updated quarterly.

Collection agents searching for deadbeats are using the CD-ROM packages to search by name, street, ZIP code or area code. Business listings can be searched by business heading or standard industrial category (SIC) listing.

Mendell says having essentially unlimited low-cost access to all of the nation's telephone directories is producing a quiet revolution in collections. Whether it is a government agency or a firm trying to track down a debtor or defendant, the ability to follow numerous trails inexpensively has changed what had been a bleak collections picture.

"With CD-ROM on the desktop we can even combine searches of businesses by SIC category and proprietor names," Mendell says. This allows collection agents to search quickly for individuals from the records of all participating states.

A drawback for collection agents using phone directory CD-ROMs, however, is if the alleged deadbeats are not in the phone book, they will not be on the lists.

Software head games

Information systems managers should be wary of how much they bad-mouth their latest software — it may affect how their staff takes to the product.

That is the finding of a new study released by professor Dennis Galletta of the University of Pittsburgh Joseph M. Katz Graduate School of Business. Galletta finds a direct relationship between negative comments about software and how well people learn to use it. Users in the study who were exposed to negative comments about the software were more frustrated with it, had a poorer understanding of it and were less likely to purchase or use it than users who were exposed to positive comments.

Is the grass greener?

Want to know how well your salary stacks up against your IS peers? You can find out how the other half is living in the newly published, "Compensation in the MIS/DP Field, 11th Edition" (Crete, Ill.: Abbott, Langer & Associates, 1994, 560 pages, $750).

The publication reports salaries, salary ranges and total cash compensation for 84 job functions, ranging from junior data entry operator to director of MIS/data processing. Statistics are broken down by employer, size of organization, total MIS/data processing budget, level of computer hardware, region, education, experience and supervisory responsibility.

Ernst & Young buys Dome

Ernst & Young in New York acquired Indianapolis-based Dome Systems, an information technology consulting firm specializing in the pharmaceutical and life sciences industries.

Dome Systems is primarily known for developing client/server systems for leading pharmaceutical firms and will expand Ernst & Young's development of systems for research and development for the Food and Drug Administration.

Anderson plans tech park

As part of an overall strategy aimed at showcasing its information technology expertise, Andersen Consulting plans to develop a multimillion-dollar information technology research and software development park outside its Chicago headquarters in Northbrook, Ill. Some 1,600 researchers, consultants and business applications personnel will be relocated to five buildings scattered over 60 acres at the suburban site.

"We'll have world-class experts in virtually all areas of technology working directly with clients," says W. James Fischer, managing partner of Andersen's Technology Services Group. Andersen already operates two information technology research facilities, one in Palo Alto, Calif., and the other in Sophia Antipolis, France.

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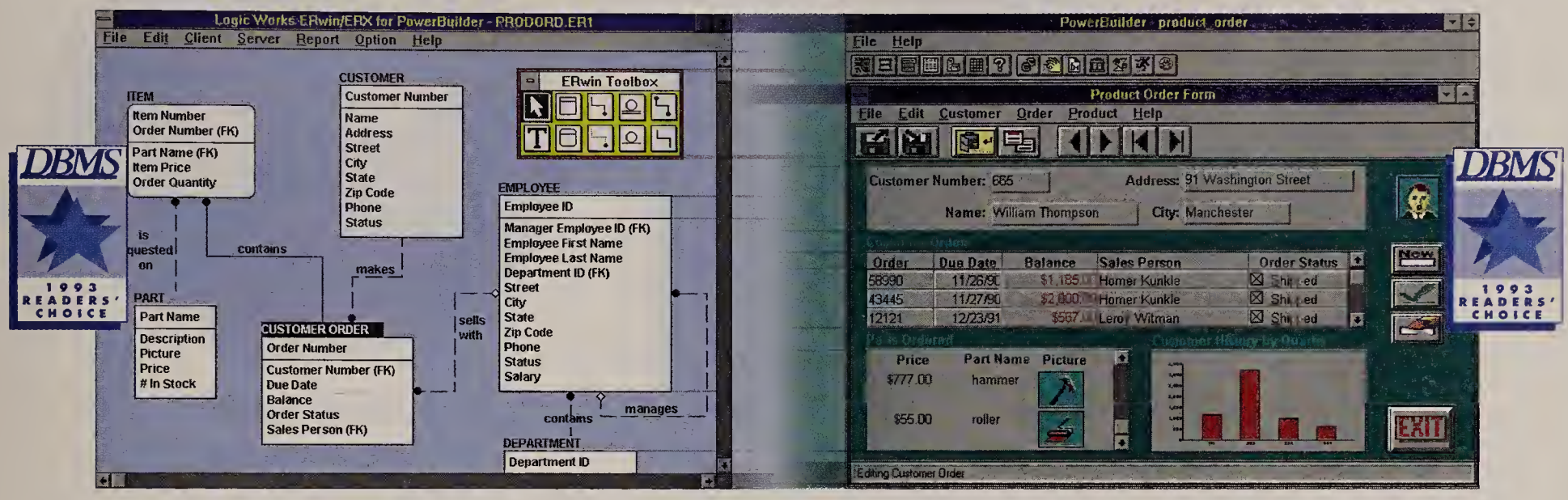

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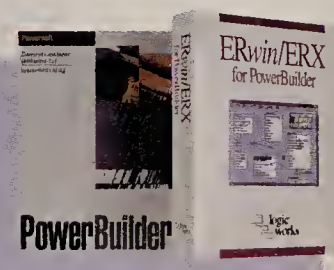

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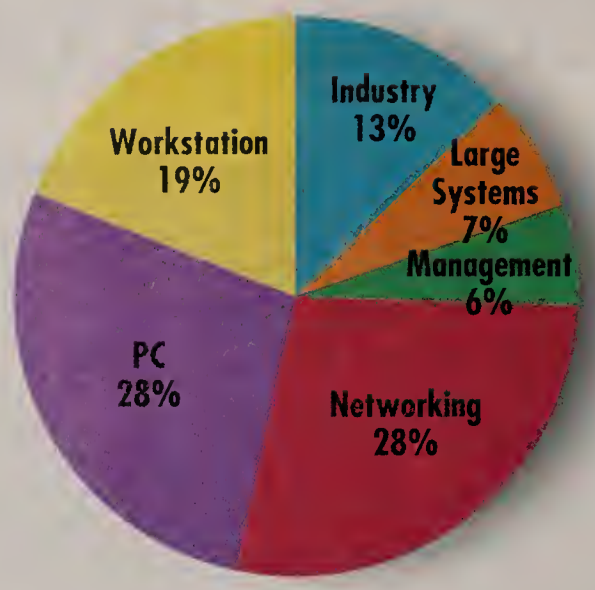

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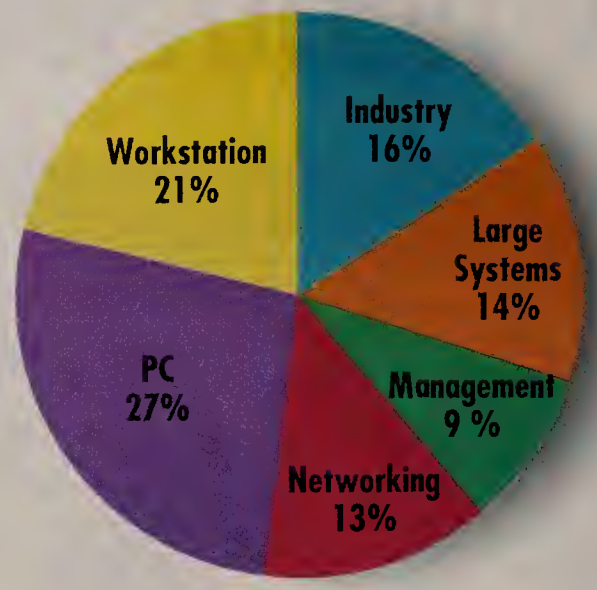

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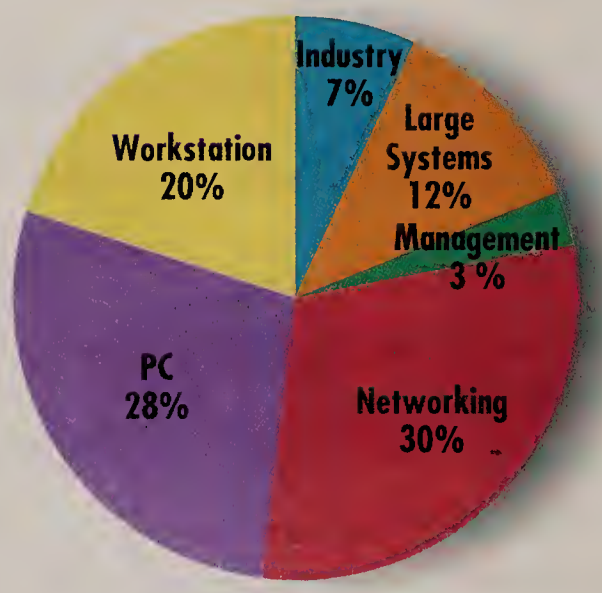

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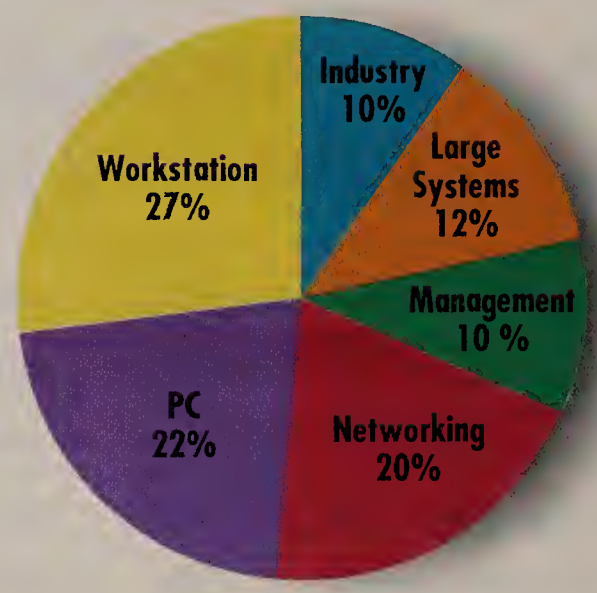

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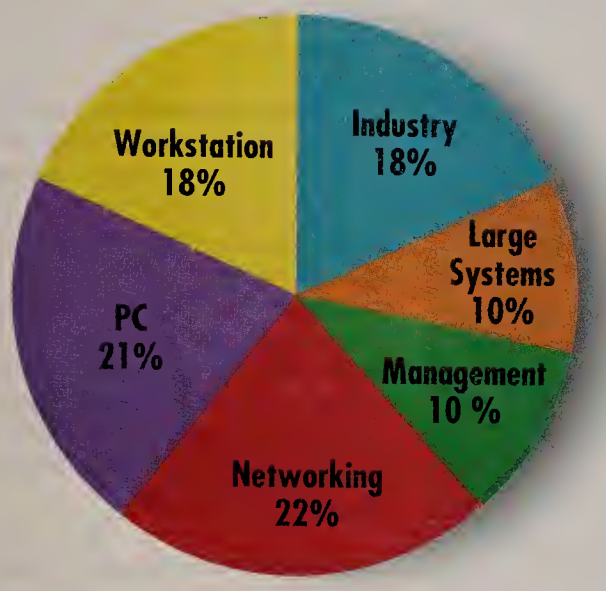

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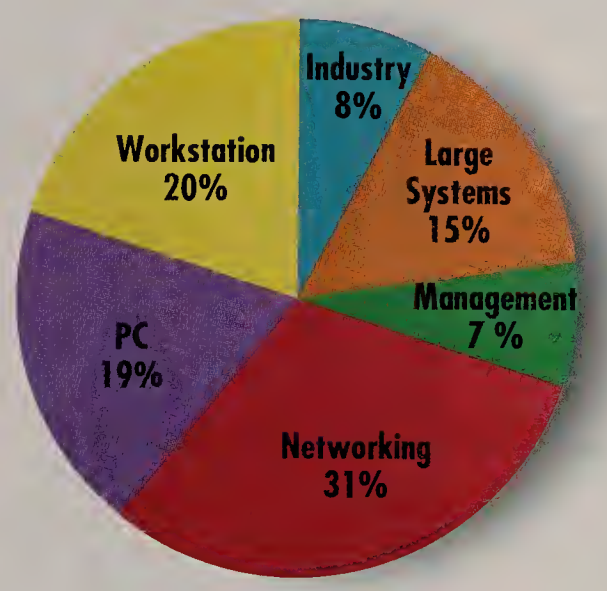

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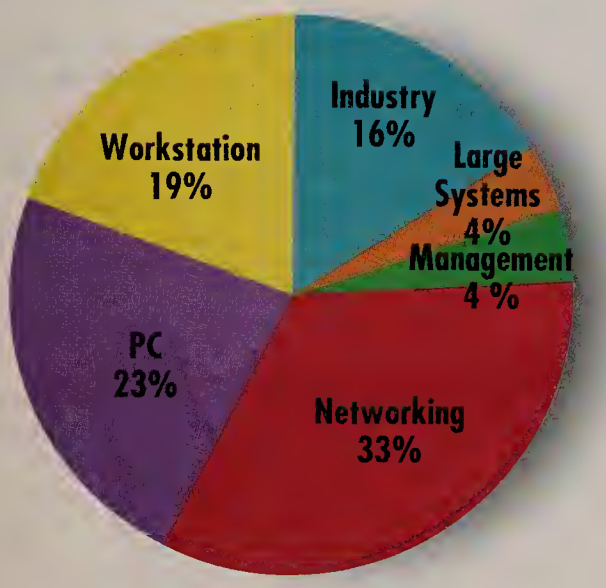

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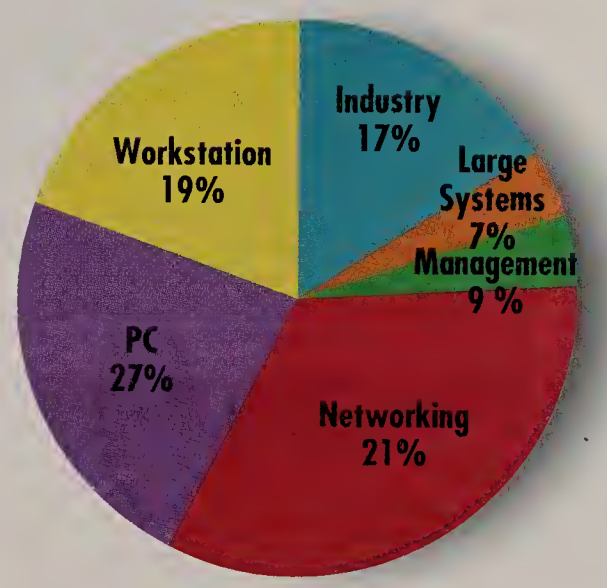

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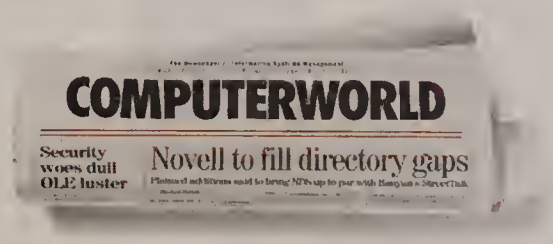

The Newspaper of IS

Calendar

An evening with Tom Peters

Tom Peters *will speak at the 10th Annual AME 1994 Conference*

With global competition, pricing pressures and the need for enhanced productivity growing, companies need all the advantages they can get. Ways that organizations can develop such advantages will be discussed when the Association for Manufacturing Excellence (AME) hosts an evening with Tom Peters at the 10th Annual AME 1994 International Conference, scheduled for Nov. 15-18 in Boston.

Peters will speak at the main conference on Nov. 17-18 on the theme of "Global Advantage" and will be joined by three other keynote speakers in discussing global manufacturing, successful teams and best practices.

Other keynotes include Wickham Seelig, vice president of global manufacturing strategy at AT&T Corp., on "Manufacturing on the Information Superhighway: The Shape of Things to Come"; Fujio Cho, president and chief executive officer of Toyota Motor Manufacturing USA, on "Toyota's Experience in Kentucky"; and James Womack of MIT, co-author of *The Machine that Changed the World*, on "From Lean Production to the Lean Enterprise."

Prior to the Global Advantage Conference, the AME will host on Nov. 15-16 a Beginnings in Excellence and Next Steps to Excellence Conference at the Marriott Copley Plaza in Boston. The cost is $1,195 for the Global Advantage Conference and $1,395 for the four days.

JULY 31 - AUG. 6

12th National Conference on Artificial Intelligence/Sixth Innovative Applications of Artificial Intelligence Conference. Seattle, July 31-Aug. 4 — Contact: American Association for Artificial Intelligence, Menlo Park, Calif. (415) 328-3123.

Tools USA '94. Santa Barbara, Calif., Aug. 1-5 — Contact: Tools USA '94, Santa Barbara, Calif. (805) 685-1006.

IS Self-Assessment and One-on-One Benchmarking Seminar & IS Financial Benchmarking and Peer Analysis Conference. Washington, Aug. 2 (seminar) and Aug. 3-5 (conference) — The seminar is intended for those considering information systems benchmarking or interested in starting the benchmarking process with little out-of-pocket expense. The conference will present a variety of principles and practices used to conduct internal and external IS financial benchmarking and peer analysis. Contact: Terence Quinlan, Financial Management for Data Processing, San Francisco, Calif. (415) 731-3706.

ATM Market Development: New Applications and Opportunities. Washington, Aug. 2-3 — Focus is on the business case for Asynchronous Transfer Mode (ATM): ATM vertical markets, carrier- and user-migration strategies and lessons and interoperability challenges. Contact: TeleStrategies, Inc., McLean, Va. (703) 734-7050.

International Storage Systems Symposium. San Francisco, Aug. 2-5 — The conference is devoted exclusively to storage. Contact: Skill Dynamics, Dallas, Texas (214) 406-7200.

Macworld Expo. Boston, Aug. 2-5 — Contact: Macworld Expo International hot line, Hyde Park, Mass. (617) 361-3941.

The Technical Side of Health Care Electronic Data Interchange (EDI). Chicago, Aug. 4-5 — This course is targeted to health care providers, payers, third-party administrators, claims processors, employees and financial institutions. Focus: EDI in health care at the technical level and the how-to information needed to fully implement EDI in the health care setting. Contact: Sterling Software, Inc.'s Commerce Institute, Dublin, Ohio (800) 456-3703.

AUG. 7-13

GroupWare '94. San Jose, Calif., Aug. 7-10 — The conference will offer an emerging technologies fellowship program for groupware companies without the funds to display their groupware products publicly. The fellowship program also fosters publicity, partnerships and contacts for up-and-coming companies. Contact: Bob Bierman, The Conference Group, Scottsdale, Ariz. (602) 661-1260.

Share Summer 1994 Meeting. Boston, Aug. 7-12 — Keynote: Louis V. Gerstner, IBM chairman and chief executive officer. Contact: Share, Inc., Chicago, Ill. (312) 822-0932.

The Asynchronous Transfer Mode: Foundation for Broadband Networks. Denver, Aug. 8-9. Also being held in Troy, Mich., Oct. 10-11; Philadelphia, Oct. 24-25; and Atlanta, Oct. 26-27 — Contact: Lori Ann Milhaven, International Institute for Learning, Inc., New York, N.Y. (212) 758-0177.

World Developers Conference. Seattle, Aug. 8-10 — The conference will offer seminars and sessions on authoring techniques, multimedia applications, third-party solutions, computer-based training and database modeling. Keynotes are Paul Allen, chairman and chief executive officer of Asymetrix Corp.; Bert Kolde, president of Asymetrix; Jesse Berst, editor and publisher of "Windows Watcher"; and Rick Segal, director of multimedia development at Microsoft Corp. Contact: Waggener Edstrom-International Public Relations Counsel, Bellevue, Wash. (206) 637-9097.

Information Security Managers Symposium XIII. Hilton Head, S.C., Aug. 9-11 — The conference will address security issues such as multiplatform security administration, warning systems, securing the client/server environment and preparing for a disaster. Contact: MIS Training Institute, Framingham, Mass. (508) 879-7999.

Share Technology Exchange. Boston, Aug. 9-11 — Contact: Share, Inc., Chicago, Ill. (312) 822-0932.

Workflow '94. San Jose, Calif., Aug. 10-12 — The conference will feature sessions for three levels of workflow technology experience: "Getting Started," "Implementing Now" and "Next Steps." Contact: Bob Bierman, The Conference Group, Scottsdale, Ariz. (602) 661-1260.

The Kerzner Approach to Project Management: A Systems Approach to Planning, Scheduling and Controlling. Troy, Mich., Aug. 12-15 — The event will examine how firms can get line and project managers to work together to bring projects in on time, on budget and conflict-free. Contact: Lori Ann Milhaven, International Institute For Learning, Inc., New York, N.Y. (212) 758-0177.

Executive Track

After five years as a luminary at Ernst & Young's Center for Business Innovation, **Thomas Davenport** is returning full time to academia. On Sept. 1, Davenport will leave the Boston-based center for a job as professor and director of the information systems management program at the University of Texas at Austin.

Davenport, who has taught at the Harvard Business School, Harvard University and Boston University, will [illegible] Ernst & Young re[illegible]

Allied Signal Technical Services Corp. in Columbus, Md., has announced the appointment of **Eric Singleton**, 32, as director of IS. He will report to the president of the company. Prior to the appointment, Singleton was IS director at the Orange County Property Appraiser's Office in Orlando, Fla.

Bank of Boston has announced the appointment of **Michael Lezenski**, 46, as chief technology officer and executive director of technology and system services. He will be responsible for a 1,100-person team combining the corporations's computing, hardware and network function with systems development. He was previously department executive for technology services and banking operations at the company, which includes computing and telecommunications services and deposit operations.

US TeleCenters, Inc. in Boston has announced the appointment of **Frederick H. Stanley** as vice president of information services and chief information officer. Stanley has more than 25 years of experience in information services, managing projects, information service organizations and his own firms. He was previously senior consultant and assistant director at the DMR Group, an information services consulting group.

Mercantile Technologies in St. Louis has announced the appointment of **Anthony Salvati** as president. He will be responsible for systems, data processing and telecommunications functions at Mercantile Bancorporation, Inc. Prior to joining the company, Salvati, 49, held a senior post at Edge Systems, Inc., an international financial services consulting company.

Viking Freight System, Inc. in San Jose, Calif., has announced the appointment of **Randy Gardner** as director of MIS. He will oversee an IS staff of 115 and will be responsible for developing technical strategies. Gardner was previously technical support manager at the company. He joined Viking Freight in 1978 as a dockworker, transferring to the MIS department in 1981 as a computer operator. Since 1984 he has held various MIS management positions at the company.

Harvard Community Health Plan in Brookline, Mass., has announced the appointment of Cecilia Claudio as CIO. In this newly created position, Claudio will be responsible for bringing a business focus to the company's IS department. Claudio was previously acting CIO and vice president of information management at Xerox Corp.'s U.S. Customer Operations Division.

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23. Dir./Mgr. Sys. Development, Sys. Architecture
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3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)

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(a) Solaris	(e) Mac OS
(b) Netware	(f) Windows NT
(c) OS/2	(g) Windows
(d) Unix	(h) NeXTstep

App. Development Products ❑ Yes ❑ No

Networking Products ❑ Yes ❑ No

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30. Medical/Law/Education
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60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/ Transportation
70. Mining/Construction/Petroleum/Refining/Agric.
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./ Retailer
95. Other_____ (Please Specify)

2. TITLE/FUNCTION (Circle one)

IS/MIS/DP MANAGEMENT

19. Chief Information Officer/Vice President/ Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr.: Network Sys., Data/Tele. Comm., LAN Mgr. /PC Mgr., Tech Planning, Admin Svs.
23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Mgt.
60. Sys. Integrators/VARs/Consulting Mgt.

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13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT

51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT

80. Information Centers/Libraries, Educators, Journalists,Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)

Operating Systems

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(b) Netware	(f) Windows NT
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THE END-USER INVASION

BY ALICE LAPLANTE

With shrinking tech budgets and staff shortages, end users are being asked to shoulder more IS responsibilities. Are they able and willing to handle these duties along with their "real" work? Non-IS types talk about the ups and downs of helping out.

KENT HANSON

SIKORSKY'S ERIC STEGMAN, AN INDUSTRIAL ENGINEER, ESTIMATES HE SPENDS 60% OF HIS TIME ON IS-RELATED ACTIVITIES

Dianne Reissig Peabody is having a hectic day.

As branch administrator at the Atlanta office of bathroom fixture giant Kohler Corp., Peabody handles routine clerical work as well as customer service calls that come in from local Kohler dealers and distributors. Today, the phone hasn't stopped ringing since 8:30 a.m.

Soft-spoken and affable, Peabody looks up the status of a pending shipment for one caller, checks a product part number for another and then takes time out to speak to *Computerworld* about her other, unpaid and unofficial job at Kohler: resident computer expert.

"It's very informal. But whenever anyone needs anything, they come to me," explains Peabody, who estimates she spends about 10% of her work week dealing with information systems matters. The seven-year Kohler veteran installs software, troubleshoots hardware problems and acts as the prime conduit of communication between the official IS staff and workers in her office. "It gets a little hairy sometimes," she says.

Call Peabody a power user. A PC guru. An end-user helper. Whatever. You'll find employees like her in virtually every U.S. business.

End-user invasion, *page 94*

LaPlante is a free-lance writer in Woodside, Calif.

End-user invasion

CONTINUED FROM PAGE 93

They don't have technology titles. Usually, they have no formal computer training. Most don't get compensated for the extra time they put in. But they make a substantial contribution to the IS function.

In the next few pages, *Computerworld* takes an up close and personal look at three end users shouldering responsibility for systems and applications without formal membership in the IS ranks. Their experiences point to ways IS can attempt to integrate such interested end users into the technology process in a coherent and rational way. The result may be a bit of breathing room for IS staffs squeezed by time, cost and personnel constraints.

● END-USER VIEW

Eric Stegman
Senior industrial engineer
Sikorsky Aircraft
Stratford, Conn.

You're likely to find Eric Stegman roaming the halls of the quality assurance department at Sikorsky Aircraft with a disk containing LAN diagnostic tools in one hand and a binder holding the departmental budget in the other.

That's no contradiction. Virtually bursting with enthusiasm — and apparently energy to burn because he has also just completed his MBA at New York's Columbia University by attending night classes over the past four years — Stegman carries an awesome bundle of responsibilities for Sikorsky. Niema Hirsch, a manager in Sikorsky's office systems group, affectionately calls Stegman her "little monster," adding, "we couldn't get by without him."

As a senior industrial engineer at the helicopter maker, Stegman helps ensure that the quality of Sikorsky equipment and onboard electronics meets Federal Aviation Administration standards. As the designated departmental computer consultant, Stegman also coordinates the acquisition and development of technology projects for the 150 employees in the quality assurance department.

When Stegman joined Sikorsky in 1986, fresh from earning a bachelor's degree in industrial engineering from the University of Buffalo, he found that the engineer he replaced had ordered 11 IBM PC XTs prior to leaving the job. "Getting those systems up and running happened to be one of the things on my plate, and I kind of picked it up from there," he remembers.

Those 11 XTs grew to the current count of more than 200 PCs linked via a Banyan Systems, Inc. Vines LAN to one another and to the Sikorsky mainframe.

In 1988, when Sikorsky had to cut back on its IS staff and decided to enlist the help of more sophisticated users, Stegman was first in line. He went through rigorous training in hardware troubleshooting and maintenance, network-ing and applications development before he was officially declared the departmental liaison.

Stegman estimates he spends a staggering 60% of his time on IS-related activities, but he wouldn't have it any other way.

"Our IS department is good at providing us with an overall strategy, but this can fall down at the departmental level," Stegman says. "It's mostly a staffing problem. It doesn't have enough people." Thus Stegman handles all capital appropriations, decides who gets what hardware and software, keeps the LAN up and running and coordinates applications development efforts.

It could easily be a full-time job, except "we're still in downsizing mode so hiring someone is seen as evil. If something isn't getting done, you need to do it yourself," he says.

The upside of end-user involvement at Sikorsky is that the quality assurance department gets whatever technology projects it needs done without waiting for IS. The drawback? Users don't necessarily get recognition for IS-related accomplishments.

"If I were in IS, I think I could expect to hear, 'I knew how tough that was. Good job.' But my manager and [other] users don't necessarily do that; they don't understand the complexity of what I do. Other times they're really happy with things that aren't that hard: 'Wow, you got that to print.' Big deal."

Despite this, Stegman has no interest in formally joining the technology ranks. "I like technology, but I like not being in IS," he says. The ideal for Stegman would be leveraging his systems skills with his MBA and engineering background. "It'd be great to apply technology in a bigger way, but I'd want to stay on the business side of things," Stegman says. "I have no idea where that leaves me."

● IS VIEW

Niema Hirsch
Former group leader, office systems, now in a two-year management rotation and training program
Sikorsky Aircraft

"We had a major layoff in early 1987 that was a huge blow to the IS department. End-user services were cut back by 60% to 70%. We knew our remaining staff couldn't handle the enormous growth in networking, PCs and distributed computing," Hirsch explains.

So the IS group created a training program to link computer enthusiasts like Stegman with formal IS responsibilities at Sikorsky.

"We hoped we would have 50 employees sign up. More than 100 have completed the required training," she says. (Not all the users are currently active.)

"It's been a major success, thanks to users like Eric," Hirsch says. "They are fully empowered to make IS decisions. While they have enough know-how and power to create absolute chaos, happily, they like me well enough not to do that. They stay in touch."

● END-USER VIEW

Bob Wolf
Product development engineer
3M Co.
St. Paul, Minn.

Post-It Notes. Scotch Tape. 3M's Commercial Office Supply Division has had a long history of innovative ideas. Two years ago, Bob Wolf, a 3M product development engineer, joined a new 20-employee team in the division created specifically to dream up the next generation of 3M best sellers.

Wolf can't talk about the day-to-day workings of his "real" job — the office products on which his team has been working are still heavily under wraps — but he waxes poetic about his role as liaison between his group of engineers and the official 3M IS department.

Wolf orders all hardware and software for his group, determines desktop configurations for fellow designers, keeps an eye on the Windows for Workgroups LAN and performs development and maintenance on the group's Microsoft Corp. Access database to facilitate the tracking of research and survey results.

In short, he handles the sort of user-initiated projects that would make a traditional vice president of IS recoil in horror.

"But I'm not a renegade user," Wolf insists. "This is very much a cooperative effort with IS."

End-user invasion, *page 98*

KENT HANSON

A MAJOR LAYOFF IN 1987 PUT A LOT OF PRESSURE ON SIKORSKY'S IS GROUP, SAYS NIEMA HIRSCH, A TECHNICAL STAFFER. THE COMPANY LOOKED TO BUSINESS USERS TO TAKE UP SOME OF THE SLACK.

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End-user invasion

CONTINUED FROM PAGE 94

Wolf began taking over technology responsibilities because of a gap between what his fledgling team needed and what the IS workers, who were located in a separate building, could provide. Wolf had the aptitude and experience — he'd worked his way through college at a local computer store — so it was natural to try to coordinate efforts between the two entities.

"IS is a great function. It has the knowledge, the expertise and the equipment to do the job," Wolf says. "But we're the ones who really understand the business. Creating a liaison position so that we don't step on each other's toes was essential."

Thus Wolf discusses all hardware and software orders with his counterpart in IS, John Winterhalter, to avoid any conflict with 3M standards. When his group wanted to get up on the network, he made sure there wouldn't be any hardware or software incompatibilities.

Despite this, however, there's no formal relationship. "I don't report to IS in any shape or form. There's no official relationship or communication paths. We've just agreed, as two groups, to try and work together," Wolf says.

The time Wolf spends on IS matters varies a great deal from week to week, but his "real job always comes first." If a conflict arises between his design responsibilities and IS, he calls in a dedicated technology staffer to troubleshoot the network or answer a question about a piece of software or database report.

Wolf is not compensated for his IS work, despite the fact that his work days can be considerably longer than those of his engineering colleagues. But he says he doesn't mind. "I enjoy doing it, and the reason I enjoy it is because it's not something I have to do," Wolf says. "I have some talent for technology, and it's nice to be able to use it."

IS VIEW

John Winterhalter
Manager, information systems
Commercial Office Supply Division
3M Co.

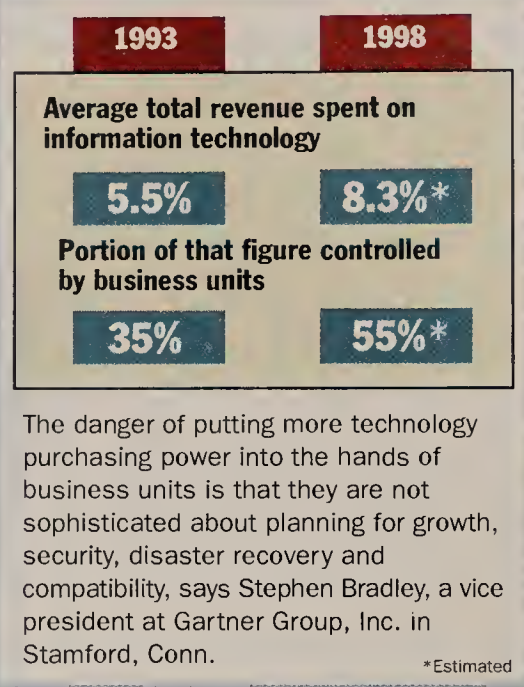
Winterhalter says the company splits IS into two basic categories: core and common activities and end-user computing. Core and common activities include those systems that are key to the business and usually have to do with operational types of data, such as order processing, sales and electronic data interchange. "Those types of systems should be built by professional IS staffs," he says.

But IS is "obviously overwhelmed" with those core and common responsibilities. "We've selected users such as Bob to help bring technology to bear on business problems at the end-user level," he says.

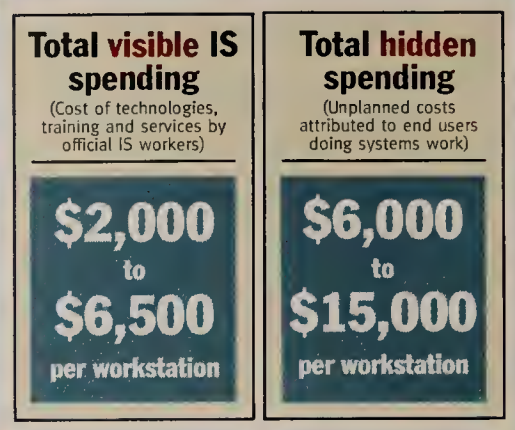
According to Winterhalter, bringing end users into the mix is starting to pay off. "Right now, we see a 1% to 2% return — in terms of productivity gain — on our IS spending. When end users start applying technology, we think this figure will jump to the 4% to 5% range."

THE COST OF END-USER HELP

In the systems area, end users are pitching in whether IS wants them to or not. IS may want to oversee their input, given that these "helpers" control 35% of the technology budget and can increase per-workstation spending by as much as $15,000.



The danger of putting more technology purchasing power into the hands of business units is that they are not sophisticated about planning for growth, security, disaster recovery and compatibility, says Stephen Bradley, a vice president at Gartner Group, Inc. in Stamford, Conn.



The massive hidden price premiums companies are experiencing stem from end-user employees who take time from their real jobs to pitch in, according to John Halloran, managing partner at Nolan, Norton & Co.

Source: Gartner Group, Inc., Stamford, Conn. (left chart); 1993 Survey of End User Computing, Nolan, Norton & Co. (right chart)

END-USER VIEW

Hank Moreira
Manager, marketing systems
American President Lines
Oakland, Calif.

Hank Moreira joined Oakland-based cargo transportation giant American President Lines (APL) in 1980 as a financial analyst. After five years in finance, he jumped over to APL's marketing department, seizing a promising opportunity to delve into the marketing intricacies of creating profitable trade lanes and cargo shipment services.

Two years ago, his career took another turn.

"I've always been interested in computers," Moreira says. "Although I've never worked in IS itself, I've always been involved, always active in the relationship between the systems group and business users."

APL's current organizational structure means that Moreira now gets paid for doing just that. He coordinates all interactions between APL's wholly owned technology subsidiary and APL's marketing professionals around the globe. He has three marketing employees reporting directly to him who help him poll APL end users and keep his finger on the pulse of their technology needs.

He also allocates funds for proposed system projects, sets priorities when there is a financial or scheduling conflict and is chairman of a cross-functional team of marketing professionals and IS employees who meet weekly to make sure development projects are on time, on budget and suited for the needs of marketing users.

"I don't actually do any programming, but I handle the user interface and manage the projects," says Moreira, whose latest project involves getting a Notes pilot up and running to better facilitate communication between his employees and the systems workers dedicated to marketing and sales development efforts.

The current setup has its drawbacks, Moreira says. Because the IS employees don't report to him, he has no say about their performance plans, their yearly evaluations, compensation and career advancement opportunities.

"I don't determine any of those very important things, so it's possible that the objectives or goals of the IS employees working on marketing systems might conflict with mine," he says.

Yet the alternative didn't work nearly as well. Things actually used to be even more decentralized at APL, Moreira says. Back in the mid-1980s, the applications programmers were located in the marketing department, not IS, and "we ran into some coordination problems. We realized we needed more centralized direction and support," he explains. Hence the liaison idea.

Moreira's career goal is to make more far-reaching technology decisions for APL while remaining on the business end. An umbrella management team within APL, called systems and processes, does the sort of technical liaison work for APL's entire domestic operations that Moreira does for the marketing department. Moreira hopes to someday be a part of that group.

"I have a vision of building a corporatewide data warehouse so that everyone in the company has access to all transactions," he says. "I'd like to make a difference, and I think technology is the key to doing that."

IS VIEW

Linda Huggins
Manager, end-user computing
American President Lines

"We've always had pockets of end users who actively bring in technology or otherwise do their own thing," Huggins says. The company's business units like to have control over budgets and priorities.

"I see people like Hank as a very valuable resource. For example, my group [applications development] has been working with Lotus' Notes, and we really wanted to do a pilot. We needed a business unit willing to commit some dollars to roll this out. Hank volunteered. He'll try anything new. If we find or develop a good product, we can count on him to give us support. If he doesn't think it's valuable, it probably isn't." ■

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Learning the ropes

By Earl Shaffer

You've mastered the latest release of Oracle Corp.'s database management system, and you know its forms and report tools inside and out. Where do you go from here?

As with most database professionals, the demand for Oracle skills varies according to industry, location and basic supply and demand. In the past five years, I've seen employers strive to do more with less, placing increased responsibilities into the laps of database professionals.

If you're new to this market, you should know that the Oracle database and tool set recently underwent significant changes. There is a new version of the Oracle 7 database engine, a graphical user interface (GUI)-based tool set known as the Cooperative Development Environment (CDE) and a new release of the computer-aided software engineering product that includes generators for the CDE tools. Since most Oracle installations are moving to Oracle 7, it's advisable to know them all.

The Oracle 7 engine includes features such as stored procedures, database triggers and distributed transaction control via two-phase commit. If you plan to move to Version 7, it will take at least three to six months to master. With classes offered by Oracle, I felt comfortable in about three months.

In turn, the CDE tools give database developers more functions and features. The new forms and menu tool and the reporting tool provide GUI layout functions and interactive development features that help developers produce better code in less time.

User groups are good places to learn about opportunities. Along with regional and local groups, the International Oracle User Group (IOUG) organizes worldwide user groups.

For more information, call (312) 245-1579 or look into the IOUG forum on CompuServe by entering "GO ORACLE." ■

Shaffer is an Oracle database administrator and president of the Florida Oracle User Group.

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Opinion

KEEP IT SIMPLE

The value of a Notes application comes from content rather than design

By Ken Lownie

Lotus Development Corp.'s Notes is an incredibly versatile and powerful tool for building collaborative computing applications. But like any powerful tool, when aimed in the wrong direction or used without care, it can create a serious mess.

This problem most frequently occurs when developers experienced in more traditional environments approach Notes with the wrong conceptual framework, either because they don't use it or are new to it.

Without the benefit of day-to-day user experience, Notes developers don't understand the essence of the Notes paradigm. They don't appreciate that Notes provides a place to put things — documents, spreadsheets, graphics — where they are easily found and retrieved.

Wrong approach

Instead, novice Notes developers often approach the software with a background in database technology or structured programming language. For example, at one large bank I worked at last year, the Notes developers insisted on using the term "screens" for the various Notes forms they were developing. Although it seemed to be a hit, their word choice and failure to catch on to Notes "forms and views" nomenclature revealed a lack of understanding.

At the bank, I found myself discussing which screen to feed the user based on a choice made on the last screen. They worked their way further from the essence of Notes: the concept of the shared document repository. Eventually, they created a very large, complex, process-intensive application, which Notes is not good for. The application did not leverage Notes' strength as a shared object store, and the bank had a very awkward and slow system.

Who's to blame

But the growth of over-engineered Notes applications can't be attributed solely to developers. Lotus is partly to blame. After all, in looking at all the development features in Notes Release 3, who wouldn't fantasize about extravagant complex applications?

In Release 3, we have buttons and macros to envision more sophisticated user interfaces. We have look-up capabilities to access information outside the local application or even outside the Notes environment. We also have the ability to build bigger Notes databases. If Notes developers use all of these capabilities, the result will be an application that performs at an unacceptable level.

Creeping elegance is an epidemic among Notes developers. It is characterized by endless promises of "just one more enhancement." This reminds me of Charlie Brown's Christmas tree, which was toppled by hanging one too many ornaments on it.

But all of this misses the point that many of the most valuable Notes applications can be built comfortably within the existing Notes environment without complex development components.

Effective designs

The key to building effective applications is to remember what the product is all about — shared information. The best applications are often simple document repositories and tracking systems used by teams with shared missions. The compelling nature of these applications comes not from complexities in application design but from the value of the information shared and the ability to access it easily.

It is easy to lose the point that the value of Notes applications comes from their content more than their design. The reality, however, is the most sophisticated user interface or look-up scheme won't make a superfluous Notes application more compelling to users, but it may make an inherently valuable application less appealing by degrading performance. Experienced Notes users understand this, but it is a lesson many Notes developers still must learn. ■

Avoid Notes development pitfalls:

1. Become an experienced Notes user before you begin developing applications.
2. Use Notes as a document repository, not a processing platform.
3. Avoid large databases; over 250M bytes or 100,000 documents is typically problematic.
4. Use @DBLookup and similar functions with discretion.
5. Test against performance criteria throughout the development cycle.

Lownie is president of Connexis Consulting Group, an Andover, Mass., firm specializing in groupware deployment and development. He can be reached through the Internet at ken_lownie.connexus@notes.compuserve.com.

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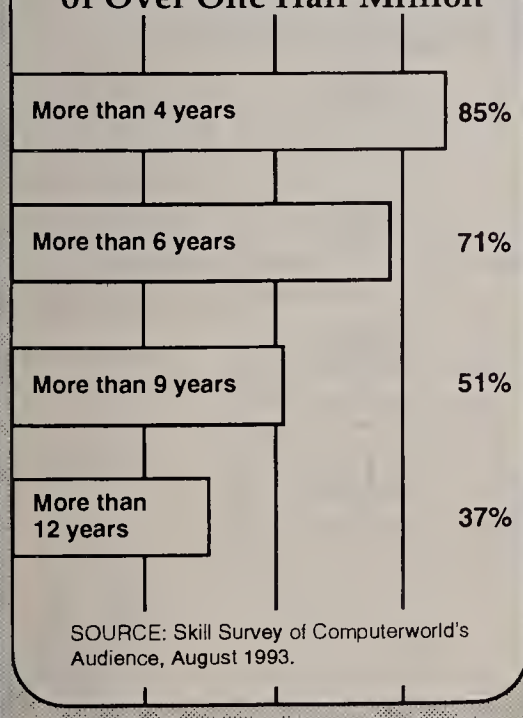

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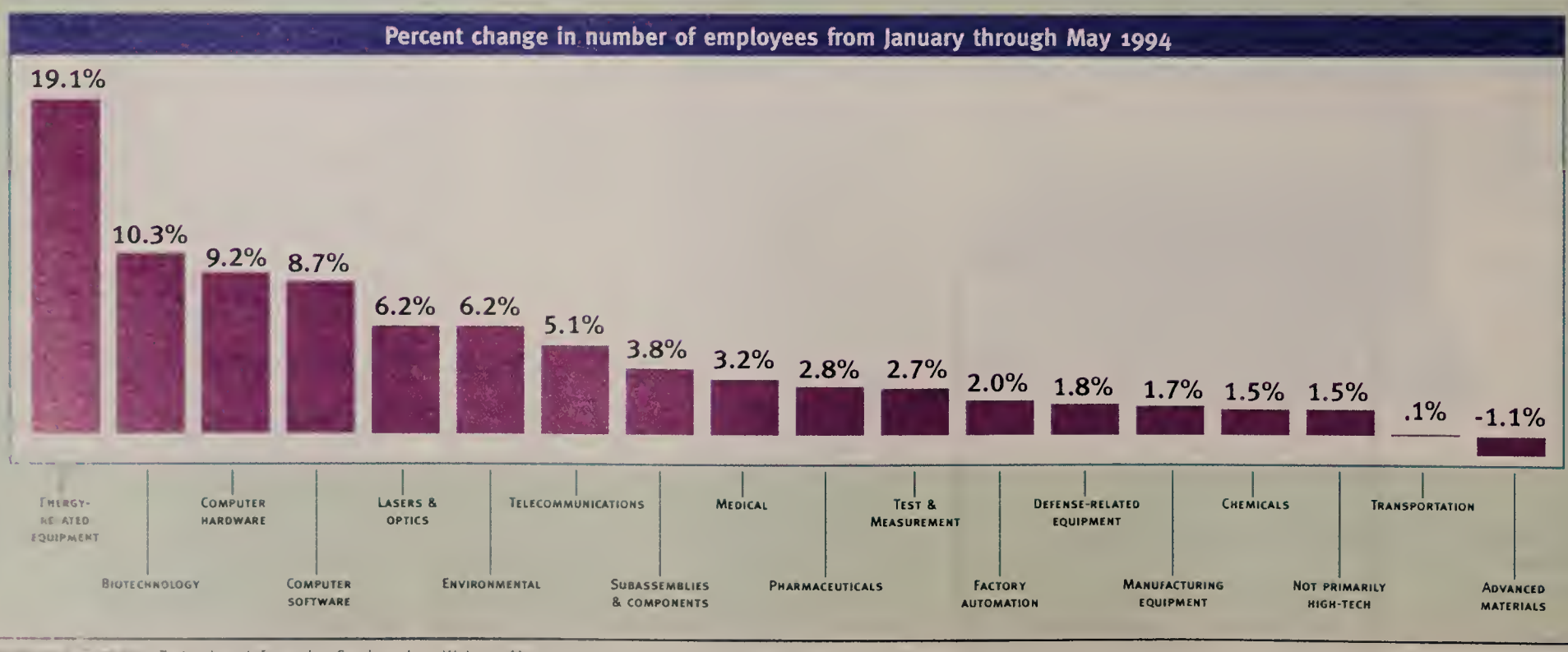

Source: Corporate Technology Information Services, Inc., Woburn, Mass.

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3030 Vintage Blvd., Juneau, AK 99801-7109

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PROGRAMMER/ANALYST: 40 hrs./wk. 8 a.m. - 5 p.m., $44,400/yr. Analyze, design & develop computer s/w application systems on IBM 3090 m/f utilizing CICS, DB2, IMS, COBOL, & Assembler. Gather user requirements, carry out internal & external system design & assist in the implementation of the system & in preparation of technical documentation. Requires Bachelor's Degree in Computer Science, Electronics & Communications Engineering. Reqr. 3 yrs. expr. in job offered, or 3 yrs. expr. as Systems Analyst/Programmer. Reqr. work expr. in design & development of s/w systems on IBM 3090 m/f utilizing CICS, DB2, IMS, COBOL, & Assembler. "Employer paid ad". E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. No: 62294.

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Planned Editorial Features:

(subject to revision)

- Companies where computer career students want to work. And their top choices for: Information Systems, Engineering, Sales & Marketing, Technical Support, Research & Development.
- Information Systems salaries from Computerworld's annual survey with the Association for Systems Management
- And much more!

Modem Madness

Depending on your needs, a LAN modem server may solve the problems associated with individual and prebundled modems

By Daniel D. Briere and Alberto Iellimo Jr.

There are some options you just don't buy with a new car unless you're really going to use them. The same is true when buying a PC.

One decision is whether to buy PCs with preinstalled modems. By next year, more than one-third of the PCs in the U.S. — and more than two-thirds of the portables — will ship with preinstalled fax/modems. Although the numbers are growing and manufacturers are offering competitively priced modem options, buyers must still weigh the pros and cons.

Buying PCs with preinstalled modems is often cheaper and more convenient than installing modems later, but there are drawbacks.

One concern is matching user requirements. Some may need a simple 9.6K bit/sec. modem for an occasional file transfer, while others require a high-speed, 28.8K bit/sec. modem with the latest in error correction and data compression protocols. Furthermore, a 9.6K bit/sec. modem may not be enough for the next user, prompting a swap-out. Many users won't need a modem at all.

One relatively new alternative to the built-in modem is the LAN modem server, which in many cases can rectify problems associated with both individual and bundled modems. The hardware, currently offered by only a few companies such as Shiva Corp., mimics a node on a LAN but is actually a multiple-modem supporting device that handles both inbound remote-access and outbound modem telephone calls.

The setup is usually simple and painless: The LAN modem server is connected to the network and then to one or more modems. These are usually external, but some models use PCMCIA formats. Dial-up software is then installed on the PCs, giving them access to the modems on the server over the LAN.

There are several advantages to such a setup. First, the pooling of modems onto one server eliminates the need for scores of individual computers with their own modems. Second, because not all users need modems at the same time, sharing modems and their respective telephone lines is more cost-efficient. Finally, centralized modems can facilitate troubleshooting.

This configuration also has drawbacks. Modem connectivity can fall prey to network difficulties. If many users need access to the modems for outbound "netmodeming," inbound remote access or both, then even servers that support as many as 16 modems may be inadequate. Also, having all your eggs in one LAN modem server basket means that a server failure could result in lost connectivity and lost dollars.

So the most important factor for corporate buyers considering modem purchases is users' needs. If only a few users need modem connectivity, purchasing individual external units may be the best solution. But if there are many users who need constant, uninterrupted connectivity, bundled purchases may be the answer.

If frequent but not necessarily constant modem use is necessary for medium-size workgroups, a LAN modem server may be the ideal option.

After assessing users' needs and deciding on an option, the rest is a matter of careful shopping for the most suitable solution at the best price, caveat emptor withstanding as usual. ■

Bricre is president of TeleChoice, Inc., a consultancy in Verona, N.J. Iellimo is a research analyst at the same company. They can be reached at (201) 239-0700 or through MCI at 445-4690.

On the rise

Percentage of PCs shipped with a fax/modem in the U.S.

1993	1994	1995
23%	27%*	32%*

*Estimated

Source: WorkGroup Technologies, Inc., Hampton, N.H.

You've just got to have it

When purchasing modems, buyers should consider the following features:

■ **Fax capability**
While not imperative, the additional cost of having this option is so inexpensive that it can't hurt.

■ **Downloadable upgrades**
When new versions of modem code are released, some modems can actually download the code into their chip sets, eliminating the need to return the modem to the manufacturer for an upgrade.

■ **14.4K bit/sec. or higher data rate**
Avoid purchasing modems that run below 14.4K bit/sec., which can cause bottlenecks in data transfers. High-speed modems will also be crucial in keeping remote-access applications running quickly and seamlessly. Additionally, the falling prices for increasingly fast modems (some running at V.34 speeds of 28.8K bit/sec.) make a high-speed modem more logical.

■ **Cellular protocol support**
As more and more users turn to mobile computing and the number of cellular modems increases, cellular capability is becoming more of an issue. To prepare for cellular use, buyers can invest in a modem that supports AT&T's Enhanced Throughput Cellular or Microcom, Inc.'s MNP-10, the two leading cellular protocols in the modem market.

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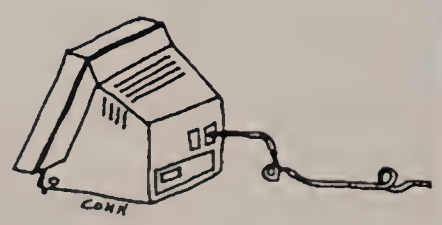

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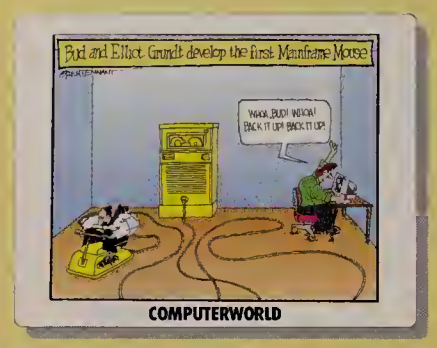

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Arrangements can be made to obtain a copy of this Request For Proposals, PIN #.85895CB05176, Monday through Friday from Ms. Sewre Persuad, (212) 240-4317 between 9:00 a.m. - 4:00 p.m. at: DoITT, 253 Broadway, Ninth Floor, New York, NY 10007.

All proposals submitted in regards to this solicitation must be received at the above address on or before the proposal receipt deadline of August 29, 1994 @ 5:30 p.m. EST.

A non-mandatory Proposers' Conference will be held on August 1, 1994 from 9.00 a.m. to 12:30 p.m. at: City Hall, Public Hearing Room, New York, NY 10007. Please call to confirm date and location of this conference.

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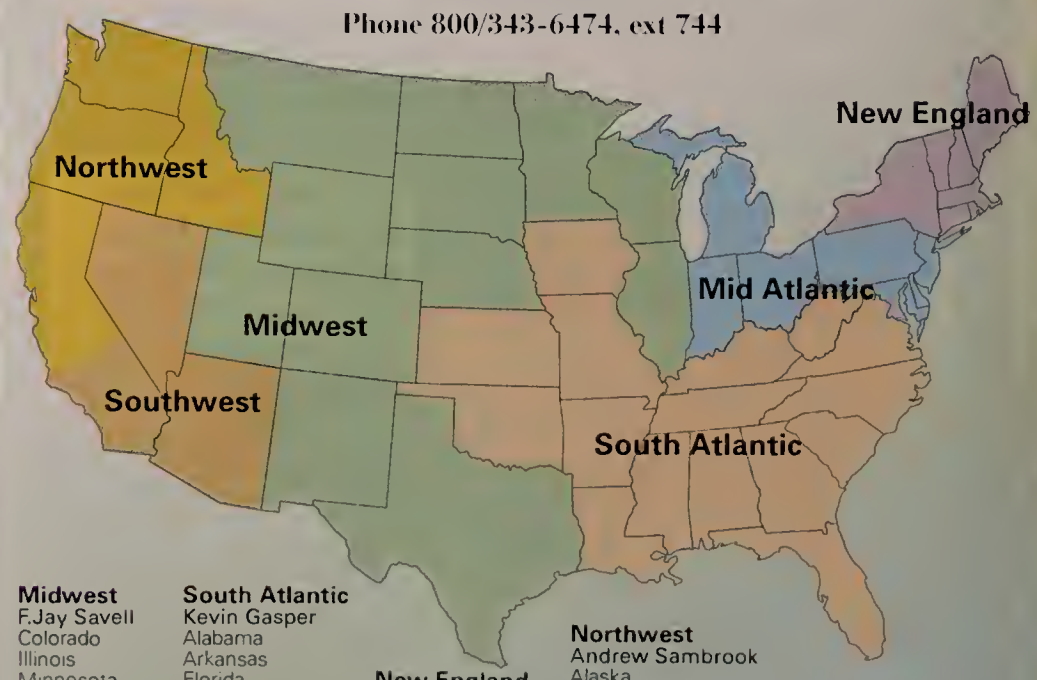

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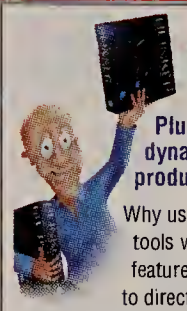

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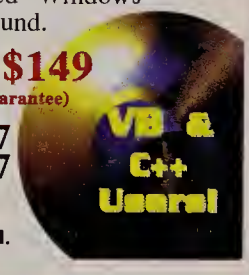

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KnowledgeWare, Inc. ... 14,78
Kohler Corp. ... 93
Kraft General Foods USA ... 64
Kwasha Lipton ... 10

L

Lannet, Inc. ... 32
LaserByte Corp. ... 42
Legent Corp. ... 1,121
LightStream Corp. ... 60
Lotus Development Corp. ... 1,6,12,42,47,102

M

Madge Networks, Inc. ... 1
Magic Software Enterprises Ltd. ... 32
Mallinckrodt Medical, Inc. ... 1
McAfee Associates, Inc. ... 48
MCI Communications Corp. ... 57
Meijer, Inc. ... 64
Memorex Telex Corp. ... 8
Mercantile Technologies ... 90
Merisel, Inc. ... 42
Meta Group, Inc. ... 14,16,24,32,67
Metaphor, Inc. ... 1
Metaware, Inc. ... 77
Microrim, Inc. ... 39
Microsoft Corp. ... 1,6,8,12,40,42,47,78,83,93
Mips Technologies, Inc. ... 8
Mobile Telecommunication Technologies Corp. ... 57
Monsanto Co. ... 83
Morrison Knudsen Corp. ... 1
Motorola, Inc. ... 48,57

N

NBC ... 39
NDMA, Inc. ... 1
New York Life Insurance Co. ... 1,39
Newport Systems Solutions ... 32
Nextel, Inc. ... 57
Nike, Inc. ... 39
Nissho Iwai Corp. ... 78
Novell, Inc. ... 6,16,47,50,54,72

O

Oberon Software, Inc. ... 122
Object Management Group ... 12,78
OK Industries, Inc. ... 1
Operations Control Systems ... 121
Optical Data Systems, Inc. ... 32
Oracle Corp. ... 8,48,67,77,101
Ornetix ... 50

P

Packard Bell ... 42
PACS Software ... 42
PaineWebber, Inc. ... 8
Panacea, Inc. ... 42
ParcPlace Systems, Inc. ... 77
PC World ... 32
PC-Kwik Corp. ... 42
PeopleSoft, Inc. ... 1,121
Performance Computing ... 10,77
Pershing & Co. ... 14
Platinum Software Corp. ... 1
Powersoft Corp. ... 14,77
Premenos Corp. ... 64
Prentice Hall Professional Software ... 54
Price/Costco, Inc. ... 32
Prodigy Services Co. ... 40
Proginet Corp. ... 16
Progress Software Corp. ... 78
Progress Software KK ... 78
Provident Life and Accident Insurance Co. ... 16

Q

Quantum Corp. ... 119

R

R. R. Donnelley & Sons Co. ... 1
Relia Technologies ... 48
Rentrak Corp. ... 28
RG Software Systems, Inc. ... 64
Roadway Logistics Systems ... 28

S

S. G. Warburg and Co. ... 1,32
Safeco Insurance Cos. ... 47
Sam's Club, Inc. ... 32
Seagate Technology Corp. ... 119
Sequent Computer Systems, Inc. ... 78
Sikorsky Aircraft ... 93
Silicon Graphics, Inc. ... 60
Smart Modular Technologies, Inc. ... 42
Smith Barney Shearson, Inc. ... 14
Software Publishing Corp. ... 39
Southern New England Telephone Co. ... 1
Southern California Edison Co. ... 40
Southern California Gas Co. ... 6
Southern Farm Bureau Life Insurance Co. ... 4
SPSS, Inc. ... 42
SQL Financials, Inc. ... 121
Standard & Poor's ... 14
Steelcase, Inc. ... 28
Store Systems Consulting & Marketing ... 64
Sun Co. ... 8
Sun Microsystems Computer Corp. ... 24
Sun Microsystems, Inc. ... 24,47,78
SunSoft, Inc. ... 57,122
Sybase, Inc. ... 10,67,77
Symantec Corp. ... 12,32,77
SynOptics Communications, Inc. ... 32
System One ... 8

T

Tandem Computers, Inc. ... 122
Team Software ... 47
Technology Investment Strategies Corp. ... 67
The Chase Manhattan Bank NA ... 10
The Dannon Co. ... 64
The Mesa Group, Inc. ... 47
The Travelers Corp. ... 1
The Yankee Group ... 1,48
Thomson Consumer Electronics S.A. ... 24
Traveling Software, Inc. ... 12
Trax Softworks, Inc. ... 47
Turnstone ... 28

U

UB Networks, Inc. ... 60
Unisys Corp. ... 69,72,78,122
United Parcel Service, Inc. ... 28
US TeleCenters, Inc. ... 90
US West Marketing Resource Group, Inc. ... 40

V

Viking Freight System, Inc. ... 90
Virtual Open Networking Environment Corp. ... 42

W

Walsh-Lowe & Associates ... 39
Walt Disney Co. ... 28
Wellfleet Communications, Inc. ... 4,8,32,121
Wells Fargo Bank NA ... 47
Western Digital Corp. ... 119
White Pine Software, Inc. ... 42
WorkGroup Technologies, Inc. ... 47

X

X/Open Co. ... 47
Xerox Corp. ... 12

Z

Zenith Data Systems ... 39

Gainers

Percent

Computer Horizons	27.3	Microage Inc.	-39.2
Gupta	25.4	Struct. Dynamics Research(L)	-21.5
Stratacom Inc.(H)	22.8	Software Publishing Corp.(L)	-15.6
Zeos International Ltd.	22.7	Walker Interactive Systems	-15.6
Octel Communications Corp.	19.5	Cisco Systems Inc.	-15.0
Knowledgeware Inc.	19.2	Cambex Corp.	-13.5
CrossComm	18.9	Computer Network Tech.(L)	-13.5
Trinzic Corp.	18.5	Cray Computer	-12.5

Dollar

Cabletron Systems	7.88	Microage Inc.	-6.38
Chipcom Corp.	6.50	Cisco Systems Inc.	-3.50
Stratacom Inc.(H)	5.25	Texas Instruments	-3.00
Powersoft	4.38	Dallas Semiconductor	-2.13
Xerox Corp.	4.38	Struct. Dynamics Research(L)	-2.13
3 COM Corp.	4.25	Zilog Inc.	-1.75
Newbridge Networks Corp.	4.06	Compuware Corp.	-1.75
Autodesk Inc.	4.00	8GS Systems Inc.	-1.50

Industry Almanac

Disk drive makers cruise

PC disk drive manufacturers seem to have put last year's slew of disappointing quarters behind them, winning over Wall Street in the process.

Drive makers suffered late last year due to horrible summer quarters, a traditionally slow period. But the high demand for PC systems this year has beefed up orders considerably. Analysts currently give PC disk drive suppliers Seagate Technology Corp., Conner Peripherals, Inc., Quantum Corp. and Western Digital Corp. the thumbs up.

Seagate is considered the group leader. "Their numbers have been sensational, and they have earned more than Wall Street expected," said Michael Murphy, editor of "California Technology Stock Letter." The good news is not limited to Seagate, however. All are expected to meet or exceed expectations for their June quarters.

The question for investors is whether PC drive makers have learned a lesson and can ride out the normally slow summer period. John Dean, an analyst at Salomon Brothers, Inc., says this is partly the case. "First, PC demand is proportionally more predictable now than last year," he said. "But also, the management of the companies have become much more conscious of their relationship with the outside world."

In fact, Murphy questions whether a summer slowdown will even occur, citing a decent economic pickup in Europe. "Relative to the June quarter, the next quarter will be down a little, but volumes in PC systems are not slowing down."

Dean said these stocks could show an upside potential going into the December quarter, while Murphy estimates stocks could show up to a 20% improvement in the near future. And further down the road? "If the Japanese economy turns around by next year, these companies could be looking at four to five growth quarters in a row," he said.

— Tim Ouellette

From reverse gear to drive

PC disk drive makers' earnings per share are up for the most part this year and are expected to show continued improvement

Company name	1993	1994*	1995*
Conner Peripherals	-$2.34	$1.88	$2.17
Quantum	$1.77	$0.47	$2.73
Seagate Technology	$2.71	$2.73	$3.50
Western Digital	-$0.67	$1.51	$2.63

*Estimated

Source: Salomon Bros., New York

Exch	52-Week Range			July 15 3 PM	Wk Net Change	Wk Pct Change
Communications and Network Services						**UP 3.27%**
OTC	63.75	19.63	3 COM Corp.	53.38	4.25	8.7
NYS	45.56	36.25	AMERITECH Corp.	38.75	-0.13	-0.3
NYS	65.00	49.50	AT&T	54.25	0.63	1.2
OTC	26.50	12.75	8anyan Systems Inc.	15.25	1.50	10.9
NYS	69.13	49.00	8ell Atlantic Corp.	55.63	0.63	1.1
NYS	63.88	53.00	8ellsouth Corp.	60.88	0.25	0.4
NYS	21.50	7.75	8olt, 8eranek & Newman	10.63	0.00	0.0
OTC	15.75	9.00	8rooktrout Technology	12.75	1.75	15.9
NYS	132.50	82.63	Cabletron Systems	106.50	7.88	8.0
OTC	43.00	15.00	Centigram Communications (L)	18.00	-0.13	-0.7
OTC	60.25	31.50	Chipcom Corp.	44.13	6.50	17.3
OTC	40.75	19.88	Cisco Systems Inc.	19.88	-3.50	-15.0
OTC	18.38	9.25	Compression Labs Inc.	11.25	-1.25	-10.0
OTC	12.38	5.63	Computer Network Tech. (L)	5.63	-0.88	-13.5
OTC	33.75	8.50	CrossComm	11.00	1.75	18.9
OTC	3.38	1.50	Data Switch Corp.	2.56	0.13	5.1
OTC	36.56	17.88	DSC Communications	22.88	2.75	13.7
NYS	17.63	8.25	General Datacomm Inds.	16.13	0.25	1.6
NYS	39.88	29.50	GTE Corp.	30.13	-0.13	-0.4
NYS	95.97	78.63	ITT Corp.	82.13	1.88	2.3
OTC	29.88	21.38	MCI Commmunications Corp.	22.94	0.19	0.8
OTC	7.75	1.50	Microcom Inc.	6.38	0.25	4.1
OTC	23.50	11.50	NetManage Inc.	15.75	0.75	5.0
OTC	7.25	3.50	Netrix Corp.	4.50	-0.63	-12.2
OTC	8.75	3.50	Network Computing Devices	3.75	0.13	3.4
NYS	11.13	7.00	Network Equipment Tech.	10.00	0.00	0.0
OTC	23.38	9.75	Network General	16.63	0.75	4.7
OTC	9.63	6.38	Network Systems Corp.	6.94	-0.38	-5.1
OTC	73.88	28.38	Newbridge Networks Corp.	41.00	4.06	11.0
NYS	33.75	21.38	Northern Telecom Ltd.	29.50	0.25	0.9
OTC	26.75	14.00	Novell Inc.	16.63	0.00	0.0
NYS	48.88	33.25	Nynex Corp.	37.88	1.00	2.7
OTC	30.00	15.50	Octel Communications Corp.	19.13	3.13	19.5
OTC	18.25	9.00	Optical Data Systems Inc.	14.25	0.25	1.8
OTC	7.50	3.25	Penril Data Comm Networks (L)	3.63	0.13	3.6
OTC	20.75	10.00	Picturetel Corp.	12.00	-0.38	-3.0
OTC	8.25	2.75	Proteon Inc.	3.38	0.13	3.8
OTC	14.38	5.88	Racotek Inc.	5.88	-0.50	-7.8
NYS	38.88	24.88	Scientific Atlanta Inc.	35.00	1.75	5.3
NYS	47.00	36.75	Southwestern 8ell Corp.	43.88	0.38	0.9
NYS	40.25	31.38	Sprint Corp.	37.38	2.63	7.6
OTC	26.75	13.38	Standard Microsystems Corp.	14.75	0.00	0.0
OTC	28.25	11.38	Stratacom Inc. (H)	28.25	5.25	22.8
OTC	34.50	13.50	Synoptics Communications	15.75	0.75	5.0
OTC	15.25	2.88	Telebit Corp.	4.25	0.00	0.0
OTC	46.00	22.75	US Robotics	28.38	0.88	3.2
NYS	50.75	38.25	U S West Inc.	42.00	-0.63	-1.5
OTC	43.88	18.75	Wellfleet Communications (L)	19.38	-1.00	-4.9
OTC	28.25	12.75	Xircom	15.38	0.63	4.2
OTC	23.00	12.75	Xylogics Inc.	19.25	1.63	9.2
OTC	30.00	11.75	Xyplex Inc.	15.00	2.13	16.5
PCs and Workstations						**UP 3.43%**
OTC	7.50	2.63	Advanced Logic Research	4.00	0.00	0.0
OTC	45.25	22.00	Apple Computer Inc.	27.75	0.63	2.3
OTC	33.00	12.50	AST Research Inc.	15.25	0.25	1.7
NYS	39.88	14.38	Compaq Computer Corp.	35.00	0.63	1.8
OTC	30.75	15.13	Dell Computer Corp.	26.25	-1.19	-4.3
OTC	25.00	9.25	Gateway 2000 Inc.	12.50	-0.88	-6.5
NYS	93.63	64.38	Hewlett Packard Co.	76.00	2.13	2.9
NYS	26.88	16.00	Silicon Graphics	23.88	0.75	3.2
OTC	31.38	18.25	Sun Microsystems Inc.	22.75	2.25	11.0
NYS	50.75	28.13	Tandy Corp.	35.00	1.00	2.9
OTC	5.13	2.38	Zeos International Ltd.	3.38	0.63	22.7
Large Systems						**UP 1.20%**
ASE	7.88	4.38	Amoahl Corp.	5.88	0.50	9.3
NYS	7.63	3.63	Convex Computer	6.00	0.00	0.0
OTC	4.50	0.50	Cray Computer	0.88	-0.13	-12.5
NYS	33.75	19.13	Cray Research Inc.	21.88	-1.25	-5.4
NYS	10.75	6.63	Data General Corp.	8.00	0.38	4.9
NYS	43.13	18.25	Digital Equipment Corp.	20.00	0.38	1.9
OTC	6.38	2.38	Encore Computer Corp.	4.38	0.31	7.7
NYS	52.25	37.63	Harris Corp.	43.25	0.50	1.2
NYS	65.00	40.63	I8M	57.13	-0.38	-0.7
OTC	18.75	7.75	NetFrame	10.00	1.50	17.6
OTC	26.00	3.88	Parallan Computer	4.19	-0.06	-1.5
OTC	23.25	5.63	Pyramid Technology	6.00	0.00	0.0
OTC	20.00	11.13	Sequent Computer Sys.	13.00	0.25	2.0
OTC	6.84	1.75	Sequoia Systems Inc.	4.19	0.19	4.7
NYS	32.25	20.25	Stratus Computer Inc.	29.13	-0.13	-0.4
NYS	16.38	8.50	Tandem Computers Inc.	12.25	0.38	3.2
OTC	30.00	4.00	TriCord Systems (L)	4.50	-0.38	-7.7
NYS	16.50	8.63	Unisys Corp.	8.88	-0.25	-2.7
Software						**UP 2.39%**
OTC	34.50	16.25	Aoobe Systems Inc.	30.75	2.50	8.8
OTC	34.50	13.50	Alous Corp.	30.00	3.50	13.2
OTC	8.38	4.50	American Software Inc.	4.50	-0.38	-7.7
OTC	15.75	6.75	Ask Computer Systems	13.25	0.13	1.0
OTC	61.75	37.00	Autodesk Inc.	53.13	4.00	8.1
OTC	4.50	2.00	8achman Info. Systems	2.13	0.13	6.3
OTC	33.00	20.50	8GS Systems Inc.	24.00	-1.50	-5.9
OTC	71.00	41.75	8MC Software Inc.	47.13	3.13	7.1
OTC	30.75	22.50	8oole & 8abbage	26.50	1.00	3.9
OTC	22.50	8.50	8orland Int'l Inc.	10.00	-1.13	-10.1
OTC	25.00	6.75	8rock Control Systems Inc.	7.63	0.13	1.7
OTC	4.63	2.38	CE Software	3.25	-0.13	-3.7
ASE	30.34	6.25	Cheyenne Software Inc.	9.13	0.75	9.0
OTC	14.25	7.38	Cognos Inc.	11.00	0.88	8.6
NYS	44.88	27.00	Computer Associates	40.88	-0.13	-0.3
NYS	5.38	2.13	Computervision Corp.	3.00	-0.25	-7.7
OTC	48.25	21.00	Compuware Corp.	40.50	-1.75	-4.1
OTC	14.00	6.25	Comshare Inc.	11.63	-0.25	-2.1
OTC	25.00	8.63	Corel Corp.	20.00	1.38	7.4
OTC	7.50	3.38	Easel Corp.	4.00	0.00	0.0
OTC	29.25	11.25	Filenet Corp.	20.25	0.75	3.8
OTC	25.00	3.13	4th Dimension (L)	3.63	0.38	11.5
OTC	12.50	6.13	Frame Technology	9.63	-0.13	-1.3
OTC	13.00	7.00	Group I Software	8.00	-0.13	-1.5
OTC	31.75	6.75	Gupta	11.13	2.25	25.4
OTC	12.00	5.88	Hogan Systems Inc.	6.38	-0.50	-7.3
OTC	29.50	16.00	IMRS	22.50	0.75	3.4
OTC	44.75	12.50	Information Resources	14.75	0.50	3.5
OTC	24.50	14.25	Informix Corp.	19.63	2.25	12.9
OTC	12.38	8.50	Intergraph Corp.	10.13	-0.63	-5.8
OTC	8.75	2.88	Interleaf Inc. (L)	2.88	-0.13	-4.2
OTC	15.50	4.75	Intersolv Inc.	10.50	0.63	6.3
OTC	50.00	27.00	Intuit Inc.	38.00	3.75	10.9
OTC	18.75	2.25	Knowledgeware Inc.	3.88	0.63	19.2
OTC	34.75	16.25	Legent Corp.	23.25	2.00	9.4
OTC	86.50	30.25	Lotus Development	39.50	3.38	9.3
OTC	18.00	6.25	Magic Software Enterprises	7.63	-0.63	-7.6
OTC	18.50	6.00	Manugistics Group Inc.	8.25	0.25	3.1
OTC	7.50	3.38	MathSoft (L)	3.38	-0.38	-10.0
OTC	11.25	4.50	McAfee Associates	8.00	1.00	14.3
OTC	17.25	8.38	Mentor Graphics	10.13	0.25	2.5
OTC	30.25	11.50	Micro Focus	15.50	-0.38	-2.4
OTC	11.63	4.75	Micrografx Inc.	5.50	-0.50	-8.3
OTC	54.63	35.19	Microsoft Corp.	48.81	-1.06	-2.1
OTC	39.25	22.88	Oracle Corp. (H)	39.00	0.38	1.0
OTC	44.75	21.50	Parametric Technology	23.91	-0.59	-2.4
OTC	24.50	14.00	ParcPlace Systems Inc.	17.00	0.50	3.0
OTC	41.38	26.00	Peoplesoft	34.75	2.25	6.9
OTC	6.25	3.50	Phoenix Technologies	4.50	0.00	0.0
OTC	69.50	24.25	Powersoft	55.88	4.38	8.5
OTC	39.75	3.50	Platinum Software	6.63	0.88	15.2
OTC	14.75	7.25	Platinum Technology	14.75	1.75	13.5
OTC	60.25	27.00	Progress Software Corp.	30.50	1.38	4.7
OTC	4.13	1.94	Quarterdeck Office Sys.	2.56	0.19	7.9
OTC	31.25	11.75	Rainbow Technologies Inc.	14.50	2.00	16.0
OTC	11.38	4.00	Rasterops	4.13	-0.38	-8.3
OTC	14.50	3.13	Ross Systems (L)	3.19	-0.06	-1.9
OTC	28.75	3.00	Sapiens Intl. Corp. N.V.	4.38	0.38	9.4
OTC	14.63	9.75	Softkey International Inc.	13.19	0.69	5.5
OTC	8.63	3.38	Software Publishing Corp. (L)	3.38	-0.63	-15.6
OTC	13.75	5.00	State of the Art	6.50	-0.50	-7.1
NYS	35.63	21.25	Sterling Software Inc.	31.00	1.50	5.1
OTC	21.63	7.63	Struct. Dynamics Research (L)	7.75	-2.13	-21.5
OTC	57.00	25.75	Sybase Inc.	47.63	1.63	3.5
OTC	20.50	9.88	Symantec Corp.	12.63	0.38	3.1
OTC	52.75	33.00	SynOpsys	37.25	-1.25	-3.2
OTC	24.25	11.75	System Software Assoc.	13.75	0.00	0.0
OTC	6.75	3.13	Trinzic Corp.	4.00	0.63	18.5
OTC	30.00	11.75	ViewLogic Systems	14.00	-0.50	-3.4
OTC	23.25	11.50	VMark Software Inc.	18.25	0.75	4.3
OTC	13.25	5.50	Walker Interactive Systems	6.75	-1.25	-15.6
OTC	60.00	20.00	Wall Data Inc.	44.50	2.63	6.3
Semiconductors						**OFF 0.11%**
NYS	32.75	16.75	Advanced Micro Devices	25.38	-1.50	-5.6
NYS	31.13	19.38	Analog Devices Inc.	30.00	0.25	0.8
OTC	29.63	10.94	Atmel Corp.	26.00	-0.13	-0.5
OTC	7.50	3.63	Chips and Technologies	4.38	0.38	9.4
OTC	44.63	16.13	Cirrus Logic	32.63	-0.25	-0.8
NYS	19.88	11.25	Cypress Semiconductor Corp.	17.88	0.13	0.7
NYS	20.13	13.00	Dallas Semiconductor	16.25	-2.13	-11.6
OTC	27.75	14.75	Integrated Silicon Systems	18.75	0.38	2.0
OTC	74.50	49.25	Intel Corp.	59.34	-0.16	-0.3
NYS	28.88	13.00	LSI Logic Corp. (H)	27.00	-1.00	-3.6
OTC	26.75	12.25	Lattice Semiconductor	18.00	-0.50	-2.7
NYS	39.91	15.16	Micron Technology	36.63	-0.63	-1.7
NYS	54.88	41.81	Motorola Inc.	48.75	3.88	8.6
NYS	25.00	14.38	National Semiconductor	17.50	-0.50	-2.8
OTC	10.13	6.50	Sierra Semiconductor	9.00	0.75	9.1
NYS	89.50	55.75	Texas Instruments	80.50	-3.00	-3.6
OTC	18.88	9.38	VLSI Technology	13.88	-0.38	-2.6
OTC	14.38	3.25	Weitek (L)	3.75	0.00	0.0
ASE	20.38	3.63	Western Digital Corp.	14.75	0.88	6.3
OTC	59.75	29.00	Xilinx	32.50	0.50	1.6
OTC	40.75	23.75	Zilog Inc.	31.75	-1.75	-5.2
Peripherals and Subsystems						**UP 5.31%**
OTC	30.50	14.50	American Power Conversion	18.25	2.25	14.1
OTC	24.75	17.25	8anctec Inc.	20.50	1.00	5.1
OTC	7.75	3.25	Cambex Corp.	4.00	-0.63	-13.5
ASE	7.38	1.88	Cognitronics Corp.	2.81	0.31	12.5
NYS	20.50	9.00	Conner Peripherals	12.88	0.63	5.1
OTC	20.25	8.75	Creative Technologies Inc. (H)	20.25	1.75	9.5
OTC	15.25	4.75	Data Race Inc.	5.75	0.13	2.2
ASE	10.75	4.13	Dataram Corp.	5.13	0.00	0.0
NYS	23.00	11.69	EMC Corp.	15.13	1.38	10.0
OTC	8.25	3.13	Emulex Corp.	7.00	0.25	3.7
OTC	21.00	13.25	Evans & Sutherland	13.50	0.00	0.0
OTC	22.50	8.00	Exabyte	15.75	0.13	0.8
OTC	34.00	4.75	Intelligent Info. Systems	5.50	0.38	7.3
OTC	4.38	2.00	Iomega Corp.	2.50	0.25	11.1
OTC	9.75	3.13	IPL Systems Inc. (L)	3.44	0.19	5.8
OTC	28.50	13.75	Komag Inc.	20.75	0.88	4.4
OTC	8.63	4.25	Maxtor Corp. (L)	5.13	0.56	12.3
OTC	8.75	4.88	Micropolis Corp.	5.75	0.25	4.5
OTC	22.50	10.00	Pinnacle Micro Inc.	16.00	1.00	6.7
OTC	12.25	6.25	Printronix Inc. (H)	11.88	1.13	10.5
NYS	11.75	6.88	QMS Inc. (L)	7.25	0.25	3.6
OTC	20.25	9.38	Quantum Corp.	15.13	0.63	4.3
OTC	9.13	3.63	Radius Inc.	5.00	0.50	11.1
NYS	17.75	7.88	Recognition International (L)	8.00	-0.50	-5.9
OTC	6.88	3.63	Rexon Inc.	5.75	-0.50	-8.0
OTC	28.75	16.25	Seagate Technology	24.75	3.13	14.5
NYS	41.50	23.75	Storage Technology	37.00	2.63	7.6
NYS	33.38	21.38	Tektronix Inc.	31.25	2.88	10.1
NYS	104.88	69.88	Xerox Corp.	102.00	4.38	4.5
Services						**UP 0.25%**
OTC	25.50	14.88	American Mgmt. Systems	24.00	0.13	0.5
NYS	4.25	2.50	Anacomp Inc.	2.75	0.00	0.0
OTC	23.50	14.50	Analysts Int'l	15.63	0.13	0.8
NYS	56.88	47.63	Auto Data Processing	53.50	1.00	1.9
OTC	18.25	9.25	Cambridge Tech. Partners	16.00	-0.63	-3.8
NYS	26.75	14.38	Ceridian Corp. (H)	26.75	1.25	4.9
NYS	24.25	14.00	Comdisco Inc.	19.13	-0.25	-1.3
OTC	12.50	5.00	Computer Horizons	10.50	2.25	27.3
NYS	44.63	27.25	Computer Sciences	44.63	1.88	4.4
NYS	9.75	6.00	Computer Task Group	8.75	0.25	2.9
NYS	32.38	8.38	CompUSA Inc.	8.88	-0.13	-1.4
OTC	13.50	7.75	Control Data Systems Inc.	8.75	0.50	6.1
OTC	11.00	6.63	Egghead Discount Software	6.75	-0.50	-6.9
NYS	38.00	26.00	General Motors E (EDS)	35.00	0.00	0.0
OTC	22.75	7.50	Inacom Corp.	7.75	0.00	0.0
OTC	28.00	14.50	Intelligent Electronics	14.50	-1.50	-9.4
OTC	22.50	8.00	Merisel	8.50	-0.63	-6.8
OTC	32.50	9.88	Microage Inc.	9.88	-6.38	-39.2
OTC	40.50	27.16	Paychex	31.75	2.50	8.5
NYS	39.75	21.63	Policy Management Sys.	34.00	0.25	0.7
NYS	25.50	18.63	Reynolds and Reynolds	23.63	0.63	2.7
OTC	28.50	16.25	SEI Corp.	18.25	-0.25	-1.4
OTC	29.38	17.50	Shared Medical Systems	23.75	-0.13	-0.5
OTC	11.00	5.63	SHL Systemhouse	5.94	0.25	4.4
OTC	30.75	9.25	Software Spectrum Inc.	13.63	1.88	16.0
OTC	42.75	31.50	Sungard Data Systems	36.00	-1.50	-4.0

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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Cray envisions new frontier

Supercomputer would perform 1 quadrillion operations per second

By Gary H. Anthes
COLORADO SPRINGS

The aging but irrepressible Seymour R. Cray is building a supercomputer with 2 million processors, far more than any on the market today. And that is just the beginning.

Cray, the 68-year-old chairman and chief executive officer of Cray Computer Corp., said that within the next four years he plans to introduce a machine with 32 million processors, a machine able to perform a mind-boggling million billion — 1 quadrillion — operations per second.

Cray's 2 million-processor machine will not be for the number-crunching scientific applications found on his traditional vector supercomputers. It will be designed for image processing, in which all the processors perform the same instructions simultaneously but on different pieces of an image — an approach called "single instruction, multiple data," or SIMD.

Supercomputer architectures projected for the year 2014

	Global shared memory	Distributed local memory	Processors in memory
Processor performance	1T FLOPS	10G FLOPS to 100G FLOPS	1G FLOPS
Number of CPUs	400	4,000 to 40,000	400,000
Memory	400T bytes SRAM	400T bytes DRAM	800G bytes DRAM
Chip bandwidth	16G byte/sec.	160M byte/sec. to 1.6G byte/sec.	32T byte/sec. (internal); 1.6G byte/sec. (external)

Source: Workshop on Enabling Technologies for PetaFLOPS Computing

Cost-saving venture

The new machine will achieve high performance at a low price by combining a simple bit processor with 2K bits of memory on a single chip, Cray said. It will cost $12 million to build — or $6 per processor — compared with the tens of thousands of dollars per processor required for the next generation of conventional vector computers.

Paul H. Smith, manager of NASA's high-performance computing and communications program, said the space agency has many image-processing applications suited for a SIMD computer with a large number of processors. "Two million is a big number, and that will be hard to do from an engineering point of view," he said. "But . . . this is probably a vision we should listen to."

Meanwhile, it is full-speed ahead for the Cray 4, the company's next generation of vector supercomputers, Cray said in a recent interview. He outlined a plan to move the financially challenged firm past the finish line on the Cray 4 (see story page 20), but he declined to discuss funding sources for the "massively parallel" image-processing machine.

Really big show

A petaFLOPS (1 million billion floating-point operations per second) computer would have 10 times the capability of all the networked computers in the U.S. today, according to "Enabling Technologies for PetaFLOPS Computing," a report from Caltech Concurrent Supercomputer Facilities at the California Institute of Technology in Pasadena.

Twenty-year plan

Cray said the market potential for both lines of computers might be about equal, an assessment supported in a soon-to-be-released report from a panel of 60 high-performance computing experts in government, industry and academia. The report, entitled "Enabling Technologies for PetaFLOPS Computing," summarizes the conclusions reached in a recent workshop sponsored by the National Science Foundation, NASA and the U.S. Departments of Defense and Energy.

The group, tasked with developing a vision for computers able to perform at 1 million billion floating-point operations per second (petaFLOPS), said the goal can be met "at reasonable cost with technology available in about 20 years ... using the paradigms that exist today" (see chart).

Traffic jams

CONTINUED FROM PAGE 1

across the processing resources of a large system. Job scheduling uses techniques to maximize system resources for both long-running processes and end users.

In client/server computing, this effort will be far more complex — and all the more critical — because it will eventually involve multiple applications as well as different servers and likely different operating systems.

AMR Corp. has learned just how difficult client/server life can be without a job scheduler.

Mark Zecca, managing director of the Premise Systems Operations Group at AMR, recalled one client/server application that a contractor designed without a scheduler.

"When it came time to submit a job, 44 people would be working and the first four downloads [of data] would work," Zecca said. "The fifth one would [overload] the system, and we would be hosed. We would have to manually submit" jobs.

Zecca said his applications provider needed to retrofit a scheduler, which his team integrated into the software package, and his staff thus faced a heavier work load.

In danger of difficulties

While many companies are still too early into client/server migration to have encountered widespread problems, analysts said the potential for job-scheduling-related difficulties is very real.

Without effective task management, users could experience overall inadequate response time because big batch jobs hog resources when end users need them. In a worst-case scenario, users could run into serious errors or business problems. Just one possibility: when related jobs that require sequential processing are fired off at the wrong time and produce incorrect results.

The problem for users, however, is that many of the client/server job-scheduling options available are not yet mature enough to select as the basis of a long-term process management strategy. Some of the systems software vendors, such as Computer Associates International, Inc., appear the furthest along in providing scheduling tools. But not all of these products are ready to roll. Legent Corp., for example, just released into beta testing last week a cross-platform version of its Jobtrack software.

A second alternative comes from the built-in schedulers that some of the client/server application vendors are offering. Typically, these tools, such as PeopleSoft, Inc.'s Process Scheduler, do the trick, but the functions are limited to the specific application and do not span a client/server environment with multiple applications.

Just do it

Analysts said there is not necessarily a superior approach. The idea is for users to at least get a plan in place.

"It is very important to choose a single scheduling product and strategy," said Bobby Cameron, a senior analyst at Forrester Research, Inc. in Cambridge, Mass. "If I am a big shop, I want my PeopleSoft batch job to be run by the same thing that's running all my other batch jobs. I don't want 13 different specialists."

But some users said that is easier said than done. The Engineering, Construction & Environment Group of Morrison Knudsen Corp. in Cleveland is going without a scheduler because "the challenge is to find products that are generic enough to handle the variety of client/server implementations," said Terry Tung, a senior manager in information systems.

Tung oversees a Platinum Software Corp. client/server financial application, which he said does not have task management components other than a print management facility. So when users launch big jobs such as reports, "the server just starts crunching" and can take up to 90% of systems resources.

"If someone else fires off a report, then I have 18 users that can't function because all the resources are being utilized by those two reports," Tung said.

"Right now, it is annoying," he said, "but it will only grow and become a persistent problem."

On the job

A lineup of the top operations management software vendors whose products include job scheduling

Source: International Data Corp., Framingham, Mass.

Job options

Job-scheduling approaches include the following:

- **Systems management tool set**
  Example: CA's CA-Unicenter, which includes a scheduler.
  Pro: Tool works on multiple Unix platforms and is integrated with other systems' utilities.
  Con: Not suitable for users who want a job-scheduling-only solution.

- **Individual job-scheduling tool**
  Example: IBM's Job Scheduler for AIX, Legent's Jobtrack and Operations Control Systems' Express.
  Pro: Suitable for users who need to purchase system tools on a component basis.
  Con: Limited to particular platforms.

- **Bundled schedulers**
  Example: Dun & Bradstreet Software's Job Scheduler, PeopleSoft's Process Scheduler and SQL Financials, Inc.'s Task Manager.
  Pro: Tools fine-tuned for particular applications.
  Con: Limited to certain applications.

Wysiwyg

You've heard of hardware, software and middleware. But have you heard of these wares?

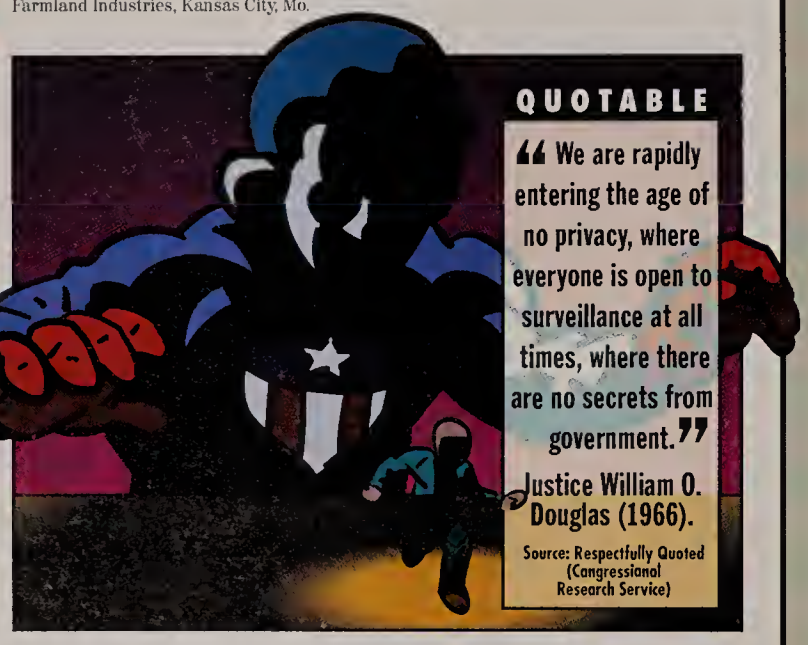
- Software that provides an interface between hardware and middleware: **Underware**
- Software that provides an interface between middleware and the end user: **Outerware**
- RISC spreadsheet software: **Sumware**
- Knowledge-based heuristic systems: **Knowware**
- Geographical positioning systems: **Whereware** (not to be confused with fashion design systems: **Wearware**)
- And, of course, project management software: **Who-what-whenware**

Source: John Eller, director of information services planning, Farmland Industries, Kansas City, Mo.

WHAT IS 50,000 TO A NETWORK MANAGER?

- His ideal salary
- His budget overspent this year
- His budget cut next year
- The number of people under him
- The number of times he has told someone how to connect to the printer
- His pulse rate when he finds that every .EXE file on the network has suddenly grown by 1,024 bytes

Source: Graham Sledge, *High Tech Joke Book* (Oak Ridge Public Relations, Inc.)



QUOTABLE

"We are rapidly entering the age of no privacy, where everyone is open to surveillance at all times, where there are no secrets from government."

Justice William O. Douglas (1966).

Source: Respectfully Quoted (Cangressional Research Service)

WYSIWYG Compiled by Lory Dix. Illustration and design by Dave Marshall.

How to contact *Computerworld* editors:

	Phone:	Fax:
Main office, Framingham, Mass.	(508) 879-0700	(508) 875-8931
24-hour tip line	(508) 820-8555	
Mid-Atlantic bureau, Rochelle Park, N.J.	(201) 587-0090	(201) 712-1808
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Inside Lines

Microsoft takes hard line with SoftSwitch

Messaging vendor SoftSwitch, which Lotus Development has agreed to acquire, has been all-but-disinvited to a Microsoft developer's conference. Microsoft quickly changed the terms by which SoftSwitch could participate in a Microsoft messaging developer's conference and in product interoperability testing, according to SoftSwitch President Mike Zisman. He added that Microsoft is the only former business partner to change the terms of their relationship.

Glitch unseats NASDAQ temporarily

NASDAQ, the electronic stock exchange, was knocked off-line for several hours last Friday by an unspecified computer glitch, according to Washington spokesmen for the exchange. NASDAQ uses Unisys and Tandem Computers mainframes in its Trumbull, Conn., data center, along with Unix-based computer hubs that link to stockbrokers' offices throughout the nation. The exchange was unable to meet its 9:30 a.m. open but was back in operation by 11:56 a.m., spokesmen said.

One out of two ain't bad

Digital Equipment's Mustang — a desktop machine using the 21066 chip — is dead. Digital reportedly could not obtain acceptable price/performance levels with the chip. Meanwhile, the company is expected this week to announce two new Unix-based, high-end workstations. The Digital 3000 Model 700 AXP, which is equipped with a 225-MHz chip, will be priced at roughly $28,000, and the Model 900 AXP, which has a 275-MHz chip, is expected to cost about $45,000. Separately, Oracle is rumored to be considering buying Digital's Rdb database division. The two firms have been talking "semi-seriously" for at least a couple of months, according to one analyst.

Psst, we can keep a secret

MacIS, a group of corporate users of Apple products, is expected to release this week its list of Top 10 concerns as determined by a recent poll of members. According to one insider, the list will reveal a notable shift: Users are most interested in getting more advanced information on Apple's hardware, software and networking product plans. In the past, members have primarily been concerned with service and support issues.

Opening a Window on profits . . .

In search of quicker returns for its Japanese investors, Oberon Software tore up its Unix business plan. It will rewrite its visual application builder to work with Microsoft's Windows and Object Linking and Embedding 2.0. Oberon sold its object-oriented software to some early users of SunSoft's Distributed Objects Everywhere developer's tool kit but had not yet ported to Unix systems from IBM and Hewlett-Packard.

Delta delays outsourcing decision — again

Despite a decision last week to eliminate 4,500 jobs from its Airport Customer Service Division during the next 12 months, Delta Air Lines continues to waiver over its outsourcing decision. In fact, the company is no longer issuing its standard "within 30 days" response when asked when it will decide whether to outsource information technology operations. A spokeswoman last week said "the negotiations are continuing" and that she could not state a time frame. Delta earlier this year eliminated Electronic Data Systems and had narrowed finalists down to one possibility: AT&T [CW, May 2].

Callers to IBM Direct last Thursday found the company unable to take their orders. It seems all the sales representatives were — what else — in a meeting! But if you want truly rapid response to your news tips or ideas, please get in touch with us at Computerworld. *Our 24-hour voice-mail tip line is (508) 820-8555; our toll-free number is (800) 343-6474. News Editor Maryfran Johnson can be reached by phone at (508) 820-8179, via Internet at mjohnson@cw.com or through MCI Mail at 590-8017.*

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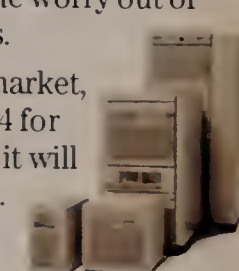

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